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Medical Times

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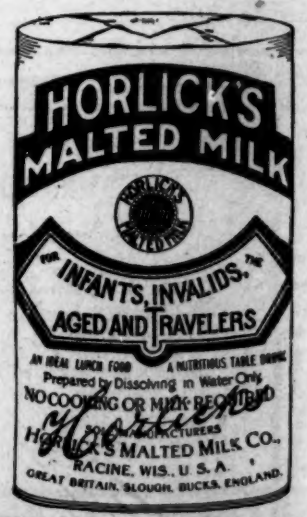
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General Scientific

SOME OBSERVATIONS ON THE DISEASED CONDITIONS OF THE SALIVARY GLANDS AND THEIR DUCTS.

DUNBAR ROY, M. D.,
Atlanta, Ga.

In medical periodicals we find very little written about the various pathologic conditions occurring in the mouth as the result of some morbid condition of the various salivary glands. In fact, text-books are very meagre in their references to this subject, leading one to think that they are exceedingly rare or at least of very little importance. In the last few years I have had referred to me several cases of this kind and from those observations I am led to think that few physicians realize the importance of the salivary glands and their ducts as obscure causes of various morbid conditions in the mouth, and in very many cases these conditions are overlooked entirely. That we may more clearly understand the subject I will review in a few words the anatomy and physiology of the salivary glands and refresh our memory with points which we no doubt have long ago forgotten.

The oral salivary glands are divided into two groups. The more important groups constituting the three large pair of salivary glands, the parotid, the submaxillary, and the sublingual, together with the numerous smaller glands which are generally found distributed in the mucosa of the oral cavity, are to be classed in the following groups: the labial glands in the submucosa of the lips, the buccal glands found between the buccinator muscle and the oral mucous membrane, the palatine glands found in the mucous membrane of both the hard and soft palates and especially on the uvula, the molar glands in the mucous membrane behind the last molar teeth and the lingual glands which are situated beneath the mucous membrane of the tongue. The parotid is the largest of the salivary glands, being flattened, somewhat triangular shaped in form, distinctly lobulated and weighs from ½ oz. to 1 oz. It is situated in front of the lower part of the external ear, extending as high as the zygoma and as low as the angle of the lower jaw. It covers approximately the posterior third of the masseter muscle and extends backwards to the external auditory meatus, the mastoid process and the sterno-mastoid muscle and is lodged in the space between the ramus of the lower jaw and the mastoid process.

Covering the parotid gland is a strong and dense layer of fascia. The parotid gland is important, not only on account of its function, but on account of the relation it bears to the surrounding parts and important structures found within the substance of the gland.

1. The facial nerve. This is the reason why facial paralysis is sometimes seen in connection with mumps or parotitis due to the inflammatory pressure.
2. The temporo-maxillary vein.
3. The suerficial temporal vein.
4. The internal maxillary vein.
5. The posterior auricular vein.
6. The external carotid artery and its terminal branches.
7. The great auricular and auriculo-temporal nerves.

The gland is also in relationship with the following structure internally, the internal carotid artery, the internal jugular vein, the pneumogastic, glosso-pharyngeal and hypoglossal nerves. It is on account of this relationship that swelling of the parotid gland, as in mumps, may cause a cerebral congestion by compression of the internal jugular vein. From its relationship to the temporo-maxillary articulation, in severe inflammation of the gland the movement of the jaw is attended by great pain and interference with depression of the jaw. On account of the intimate relationship existing between the parotid gland and the external auditory meatus, it should be borne in mind that a parotid abscess may open into the external auditory canal.

Stenson's duct, the duct of the parotid gland, runs transversely across the face about one-half inch below the zygoma. It pierces the buccinator muscle and opens on the inside of the cheek opposite the crown of the second molar tooth of the upper jaw. The orifice is 2 to 3 mm. in diameter and is clearly visible under good illumination. Very small probes can easily be passed into the duct to the extent of one or two inches. The secretion from the parotid gland being exceedingly watery it can frequently be seen projected across the mouth as a distinct stream accompanying only the ordinary examination of the throat.

The submaxillary gland is the next largest of these glands, lobulated in character and situated in the sub-

maxillary region below the lower jaw and above the digastric muscle. It is really situated in the floor of the mouth and underneath the tongue, deep in the muscular structures. It is in close relationship with the inframaxillary branches of the facial nerve, artery vein, and hypoglossal nerve. Its duct is known as Wharton's duct, about two inches long and with its opening on each side of the frenum of the tongue on a distinct ridge of membrane half way between the tongue and the teeth. This duct can also be readily probed. Some of the ducts from the sublingual gland open also into Wharton's duct, one especially known as the duct Bartholini. The fluid from this gland is both serous and mucoid in character.

The sublingual is the smallest of the salivary glands. It is lobulated and about one and a half inches in its longest diameter. It lies immediately below the mucous membrane of the floor of the mouth at the side of the lingual frenum and produces an oblong eminence distinctly seen when the tip of the tongue is raised. Its outer border is lodged in a depression in the body of the lower jaw called the "sublingual fossa." This gland has no common duct but its secretion is poured out into the mouth through ten or fifteen small ducts which empty on the ridge on each side of the frenum. These ducts are known as the ducts of Revinius. The secretion from this gland is almost entirely mucous so that its consistency is clear and ropy just like syrup. It is no tmy purpose to discuss the psychology of the salivary glands because the subject is no doubt far more familiar to many of you than it is to me—suffice it to say that their secretions play no unimportant role in the matter of deglutition, mastication, and digestion.

The fact that the secretion from the parotid is richer in ptyalin makes this gland exceedingly important as the producer of this digestive ferment.

The fact that the submaxillary and sublingual produce more mucin makes these glands exceedingly important in producing a secretion for the lubrication of the food. All of these glands are rich in nerves and can be stimulated in various reflex manner. The fact that our mouths sometimes water when we perceive the odor from the cooking of some delicious viand makes us realize that there is some relationship between the olfactory nerves and those of the salivary glands. The stimulation of the chorda tympani in the ear is closely allied with increased salivary secretion which is sometimes seen in cases of severe inflammation of the middle ear. In this case it is the parotid gland which is overactive, as is seen in the character of the salivary secretion, which is watery. When the sympathetic nerves are irritated the secretion is thicker, containing much more mucin than is seen in the chorda tympani irritation.

I wish now to speak of some of the occasional pathologic conditions seen, found associated with the salivary glands and their ducts.

Acute inflammation of one of more of these glands is by no means a rare occurrence, especially after infectious diseases, or slow fevers. Acute epidemic parotitis, commonly known as mumps, is familiar to all. This is certainly due to some infective organism. It is unnecessary to dwell upon the symptoms and cause of this disease. It has always been a surprise to me that this gland and also the submaxillary were not more frequently infected than seems to be the ease, because of the open gateway of the ducts leading to the glands. This is probably due to the fact that like the eustachian tube the epithelium lining the ducts have a tendency to take all secretions and extraneous substances away from the gland. This is seen in the expulsion of calculi from the mouths of these ducts. Acute infection of the parotid gland sometimes takes place where the whole gland suppurates into an abscess. The cases are obscure and the constitutional symptoms are sometimes very marked. When the gland does suppurate, pus may find an exit through the natural opening of the duct and pus be seen coming into the mouth. On the other hand the abscess may break into the membranous canal of the external ear and discharge mistaken for a middle ear abscess.

I have operated upon two cases where all signs and symptoms pointed to a subperiosteal mastoid abscess and where the operation disclosed an abscess of the parotid gland. In these cases the swelling and tenderness will extend high up over the mastoid and frequently the differential diagnosis cmfwyp shrdlu etaoi We sometimes meet with cases where there is a tenderness over the parotid gland accompanied not infrequently with a little enlargement of the gland recognized by palpation. Many of such cases are due to a stenosis of the Stenson's duct on account of which the partoid secretion is dammed back into the gland.

This stenosis may be due to a swelling of the membrane lining the duct or it may be due to the presence of a calcareous concretion usually denominated a calculus. Whenever such symptoms exist over the gland we always make it a rule to examine the opening of the duct inside the cheek and even sound its lumen by means of very small probes.

A calcareous deposit will be readily detected by its grating sensation and frequently will be located just inside the oval opening. The removal of these deposits will quickly bring relief. Sometimes it is necessary to probe and dilate these ducts in order to establish a free exit for this secretion. Indefinite neuralgia around the ear is by no means infrequent in these cases and the cause should always be investigated.

I wish to call attention to the sequella of mumps which is by no means an unreality. This is the occurrence of partial or complete deafness following the disease. I have the histories of a number of such cases showing these to be a central nerve deafness. Such complications must always be considered and do not be surprised then at deafness being one of the sequella of mumps.

What has been said in reference to the parotid gland is also true in reference to the sub-maxillary and sublingual but especially the former. Acute infection of the sub-maxillary gland accompanied by suppuration while not frequent cannot be called a rare condition. The mode of infection is varied but nearly always has its origin from the buccal cavity. This may be from the tonsils, adenoid tissue, teeth and gums and finally idiopathic just as a suppurative gland is sometimes seen in the neck. This probably is through the lymphatics.

An interesting case came under my observation 18 months ago. A gentleman, 28 years old, consulted me on account of a severe pain on the right side of his throat with swelling and accompanied with very painful deglutition. We both thought it a severe case of tonsillitis with probable peritonsillar abscess. On inspection the patient could hardly open his mouth. The right tonsil was swollen and angry looking. The floor of the mouth swollen and brawny. I immediately thought of angina Ludowici. On looking just beneath the tip of his tongue I saw a large amount of pus exuding from the right of Wharton's duct beside the

frenum. I then pressed over the submaxillary gland on that side and elicited great tenderness. On introducing a probe into the duct its withdrawal was followed with a flow of pus. I then recognized that we had an acute suppurative inflammation of the right sub-maxillary gland. I attempted to treat this by evacuating the abscess through the natural duct in conjunction with hot poultices. This not succeeding in relieving the symptoms the next day at the hospital the suppurating gland was removed. I show you the specimen. There was an uninterrupted recovery although the pain and swelling continued for a number of days.

Another case was that of an old lady, 68 years old. She was seen in consultation in the country for what had been diagnosed as cancer of the floor of the mouth. I found the floor of the mouth very tender and very much the symptoms of the case previous. Underneath the tongue anteriorly I found a large salivary calculus filling the opening of the right sub-maxillary duct. It looked just like a fungus, warty growth. This continued and the old lady made a good recovery. Such cases certainly indicate that these conditions must be considered in all obscure swellings about the mouth and throat accompanied with a certain amount of pain in diglutition.

Chronic conditions of the sub-maxillary salivary glands usually manifest themselves by the obstruction of their ducts. This latter may be due to the presence of salivary calculi just as is seen in the case of the parotid gland or from chronic thickening of the mucous membrane lining the duct there may be a membranous obstruction. If this obstruction continues for any length of time there is formed a large sac in the floor beneath the tongue, being nothing more than a large submaxillary cyst and which is called a ranula. This latter varies in size from a small sweling under the tongue to such large proportions that it can be seen bulging on the outside of the neck below the chin. These ranulas may be confined to one side but usually involve the whole floor beneath the tongue.

A ranula does not produce pain but only the discomfort of its presence, the larger it is naturally the more discomfort it produces.

The treatment of this condition varies a good deal according to its size. In those of small degree dependent upon the presence of a salivary calculus in the duct, the real cause can be removed when the calculus has been removed from the duct and in this way free drainage instituted through the natural opening. Strictured ducts can also prevent the outflow of salivary secretions and when long continued can produce the condition of ranula. Small probes for dilating these ducts can be used and in some cases produce a subsidence of the symptoms. However in cases where the ranula has existed for some time and we have a large dilated sac in the floor of the mouth, nothing short of the destruction of the sac or the production of a permanent fistula will be sufficient to cure the case. If the sac is to be destroyed, the paquelin cautery can be used judiciously. However there is always danger of wounding some branch of the deep arterial supply in this region and producing alarming hemorrhage. Then again by this method there may be produced some cicatricial contraction beneath the tongue which is an unfortunate sequella.

The method of Dr. G. V. L. Brown of Milwaukee has appealed to be as being the least radical and in many cases quite satisfactory in its final results. This consists in making a permanent festula by running a silver wire through the sac, clamping it with a lead shot and leaving it in for months. It can be done under cocain, is not painful and the wire can be carried by the patient with practically no discomfort.

One other method of treatment has recently been used by me with most excellent results and its ease of application will certainly appeal to the majority of physicians. The idea originated with me by having seen the most excellent results obtained by Dr. Gifford of Omaha in destroying the lachrymal sac by the use of pure trichlo-acetic acid. My method is as follows: Under cocain open up thoroughly the ramula sac and empty the same. Wipe out the cavity with normal saline and then with a small piece of cotton on the end of an applicator dip this in pure trichlo-acetic acid and scour thoroughly the whole inside of the sac. This may have to be repeated several times but in the one case this has been tried upon, the results were excellent.

In conclusion allow me to say that this paper was written because it is a subject which has been so much neglected and too little considered in our various text-books which are supposed to make some reference to this by no means a rare condition.

RECENT LEGISLATION AFFECTING THE VENEREAL DISEASE PROBLEM IN NEW YORK STATE.

EDWARD H. MARSH, M. D.

CONSULTANT, BUREAU OF VENEREAL DISEASES, NEW YORK STATE DEPARTMENT OF HEALTH.

Theoretically if a state could appropriate sufficient funds and could enact and enforce legislation of a sufficiently violent Prussian type, venereal diseases could be eradicated in a few years. Under our form of government such action is on the face of it impossible. However, in the past two years enormous strides have been made in the State of New York which should assist materially in lowering venereal morbidity.

Control of disease can be achieved through four methods of attack: First, education; second, proper diagnosis and treatment; third, isolation of dangerous cases and carriers, and fourth, the repression of those factors which favor dissemination of the disease.

In 1917 the Legislature passed and the Governor signed an amendment to the domestic relations law which requires all applicants for a marriage license to subscribe to the following oath, "I have not to my knowledge been infected with any venereal disease, or if I have been so infected within the past five years I have had a laboratory test within that period which shows that I am now free from infection from any such disease." When this law was enacted there was considerable comment and discussion as to the question of its practicability. It was felt by some that persons affected would not hesitate to commit perjury and that the law would be a failure per se. Although we have no statistics regarding the number of infected persons prevented from marrying by this law, there must of necessity be some. The great value of this law has been educational. Placards calling attention to the law have been published by the State Department of Health and have been posted in all town and village clerks' offices. Furthermore a slide with the following wording was sent to about three hundred motion picture houses in the state, "Important Notice! A new law is in effect regarding the issuance of marriage licenses. If you contemplate marriage or have a friend who does write to the State Department of Health."

The response to this notice was immediate; many letters of inquiry were received and thus an opportunity for individual educational work was presented. A personal letter is written in reply to each inquiry, quoting the law, describing the venereal diseases, the dangers and consequences thereof and outlining the laboratory tests whch should be performed before marriage, particularly in those persons who have been previously infected.

The second method of attack on the venereal disease problem consists is proper methods of diagnosis and treatment. In 1917 an amendment to the penal law was passed and signed forbidding the advertising of any remedy for or of any person treating venereal disease. This law reads in part as follows: "Section 1142-a. Advertisements relating to certain diseases prohibited. Whoever publishes, delivers or distributes or causes to be published, delivered or distributed in any manner whatsoever an advertisement concerning a venereal disease, lost manhood, lost vitality, impotency, sexual weakness, seminal emissions, varicocele, self-abuse or excessive sexual indulgence and calling attention to a medicine, article or preparation that may be used therefor or to a person or persons from whom or an office or place at which information, treatment or advice relating to such disease, infirmity, habit or condition may be obtained, is guilty of a misdemeanor and upon conviction thereof shall be punished by imprisonment for not more than six months, or by a fine of not less than fifty dollars nor more than five hundred dollars, or by both such fine and imprisonment. * * * The effect of this law is to close the avenues of illegitimate treatment, i. e., the quack and the patent medicine. That the effect of the law was salutary can be appreciated by comparing the back pages of one of the well known weekly journals previous to and following the enforcement of the act.

This year the Legislature passed and the Governor signed an addition to the public health law, known as chapter 264, laws of 1918, which further shuts off the channels of maltreatment. Section 343-q of that law reads as follows: "Treatment only by physicians or on their prescriptions. No person, other than a licensed physician shall treat or prescribe for a case of venereal disease, or dispense a drug, medicine, or remedy for the treatment of such a disease except on prescription of a duly licensed physician. Such prescription shall be retained by the person dispensing such drug, medicine or remedy, and no copy of such prescription shall be made by or delivered to any person, and such prescription shall be filled but once." Under this act the evils of counter-prescribing are eliminated.

This same law also provides in Section 343-p that persons suffering from a venereal disease in an infectious stage and who are unable to pay for treatment "may make application for care and treatment to the board of health of the health district in which such person resides and such board shall promptly institute treatment." This is real constructive legislation, for while improper treatment is forbidden, provision is at the same time made for proper care.

Section 343-m of the same law gives the local health authorities the power to examine any person who may be reasonably suspected of suffering from a venereal disease and who is likely to infect any other person; section 343-n provides that any person convicted of prostitution or of frequenting a house of prostitution shall not be released from the jurisdiction of the court until the person shall have been examined for venereal infection by the health authorities. Every person examined under the above sections who is found to be infected must submit to a prescribed course of treatment which shall only be terminated as provided for by the regulations of the health authorities. These sections give the health boards power over those persons who are a menace to others and who will not voluntarily place themselves under medical care.

By special act of legislature a bureau of venereal diseases has been established in the State Department of Health with powers to buy, manufacture and dispense remedies for the treatment of venereal diseases and to take such other measures as may be necessary to bring about control of these diseases. It is the purpose of this bureau to coordinate all of the activities interested in the problem, to carry on an intensive campaign of education, to stimulate the establishing of dispensaries in the more populous centers of the State, to organize an advisory bureau and provide salvarsan, free of cost to those unable to pay for it.

The fourth line of attack against the venereal diseases is the repression of those factors which favor their dissemination. This is a problem, not so much for the health authorities, but for the police and those agencies for reform which are prepared to cope with the questions of prostitution, alcoholism and its allied evils, the backroom of the saloon and the dance hall.

In brief the above outlines the legislation of the past two years in the State of New York bearing upon the question of the control of syphilis and gonorrhoea. With concerted action and the active co-operation of police, courts, health officials and private agencies, it may be hoped that good will result.

HOT SPELLS AND COLD WAVES.

JACQUES W. REDWAY, F. R. G. S.
Mount Vernon, N. Y.

Two disagreeable types of weather occur in the United States and in areas of similar topography in the same latitudes of other continents—the "warm wave" and the "cold wave."

So far as names are concerned the popular name of each is a misnomer. In neither is there a true wave formation. The one is a term of the progressive heating of moderately still air; the other is a downpour of cold air from high latitude and high altitude.

The general movement of the air over the greater part of the United States and Canada is from a westerly to an easterly quadrant; for the greater part, northwesterly winds prevail. Excluded from this area is the southern coast which, in summer, is in the trade wind belt. For the formation of a heated term several factors are involved. First of all, heated terms are apt to prevail when there has been only a very light rainfall for two or three weeks. The reason therefor is obvious. The rainfall of that part of the continent east of the Rocky Mountains and north of New Orleans comes with cyclonic movements of the air. If there are no general storms, the general movement of the air is very slight. This is probably the chief factor; moreover it is a condition that may be predicted with a fair degree of certainty. Almost always an area of high barometer occurs in the South Atlantic, the presence of which is made known from the weather bureau station at Bermuda. This condition is so marked that, in weather bureau lore, it is commonly called "a stranded Bermuda high." As a result, there occurs a gentle flow of air over all that part of the United States and Canada east of the Rocky Mountains. This flow of air pretty nearly neu-

tralizes the normal air currents flowing from the west.

A steady and even pressure, slightly above normal, all over the eastern two-thirds of the United States is indicated by the barometer. Thus, during the heated term of July 21-24 of this year the pressure east of the Appalachian Mountains averaged a little less than 30.20 inches; throughout the Mississippi basin it was a little greater than 30.10 inches. In other words, the greater part of the country was covered with a fairly level lake of still air.

Under the circumstances, the sun steadily heated the ground and the ground, in turn, warmed the air. This continued until the maxima ranged from 95° to 100°, and the minima from 70° to 74°. These, it is pertinent to add, are weather bureau temperatures taken under conditions that are not affected by the radiation from buildings and pavements. The temperature in which humanity along city streets sweltered was from three to five degrees higher in the day; the difference was even greater at night. The hot spell of August 5-8, bringing 106°, the highest known, was similarly formed.

The death toll resulting from such a hot spell as that of July 30-August 2, 1917, cannot be accurately stated. Within a radius of twenty-five miles of City Hall, New York, the cases of insolation numbered about one hundred. General Greely, who made a searching investigation of the hot spell of July, 1881, reported that the death toll was in excess of one thousand. In Cincinnati alone two hundred and thirteen died of sunstroke.

The cases of death indirectly due to hot spells cannot be estimated even with a remote degree of accuracy. All that one can claim is the fact that the ratio of hot spell death rate to normal death rate increases by leaps and bounds, at one time and only slightly at another.

Aside from the increased possibilities of death from heat, other factors become unusually potent. The putrefaction of organic matter is much greater during the hot spell than at other times. The air becomes very foul and its dust content increases greatly. In other words, everything becomes excessively dirty, and there is no wind to scavenge infested localities. Add to this the lowered vitality of humanity in general and the increased death rate of the hot spell possesses no mystery.

The hot spells of Southern California have a disagreeable feature that is found in only a few places elsewhere —namely, the Santa Ana wind. It is a wind born of the desert, and when the mountain passes begin to "show white" the prudent housekeeper battens doors and windows and prepares for the inevitable. By and by a suspicion of dust comes to the peripheral nerves of the fingers; and then hell is let loose. The blinding storm of dust begins its handiwork. In an hour's time vegetation looks as though swarms of cicadae had held riotous dance in the gardens. Fruit drops from the trees and everything green turns brown and sere. Occasionally the hot blast and flying dust kill many young farm animals, but this is not a common occurrence. The hot spells and dust storms of this region are the result of outflowing air from the nearby deserts. Years ago when the telegraph lines were operated by the old-fashioned gravity batteries, the operators occasionally disconnected their batteries and worked the lines by earth currents.

The cold wave is an institution per se. In weather bureau lore the technical definition of the cold wave has varied from time to time; it likewise varies in different latitudes. In the main, it is a fall in temperature twenty degrees or more, the low point reaching 32° or lower; a few localities excepted, freezing temperature is involved. The cold wave almost always follows a winter storm if the latter is accompanied by a low barometer. Here is the record of the weather bureau at Mount Vernon for December 8, 9 and 10 of last year.

"Dec. 8: At 8 a. m., air raw and disagreeable. Variable winds shifting to the east, settled in the east at 10 a. m. Snow began to fall lightly at 10.15 a. m., but the wind soon developed squally conditions, the latter occurring in gusts from the southeast. Barometer fell rapidly from 30.24 in. at 8 a. m. to 29.23 in. at 8 p. m. and 29.18 in. at 10 p. m. At 5 p. m. the temperature, which had reached a minimum of 16° at 7.30 a. m., began to rise rapidly and the snow changed to rain which converted nearly three inches of snow to slush.

"Dec. 9: Temperature at 12.01 a. m., 38°; at 8 a. m., 16°. The sudden rise of temperature last night was followed by a high northwest wind bringing the second cold wave of the winter. The slush quickly froze to a covering of ice varying from one to three inches in thickness. The low barometer filled with a wind having a velocity varying from twenty to sixty miles an hour."

"Dec. 10: Maximum temperature, 20; minimum, 10; wind velocity, 18 miles."

The cold wave of December 30, of last year was not preceded by a storm in this vicinity. It followed on the heels of the highest barometer of the year, 30.75 in. on the 27th. There was a slight fall on the 28th to 30.23 in., but during the progress of the cold snap which brought to Southern New York the lowest temperature registered in a century, the barometer varied but little from 30.40 in. The wind varied from a few miles to about twenty-five miles an hour. It is a grim sort of joke that, according to strict technical definitions, the severest cold snap that ever visited New York City was not a cold wave at all. As a matter of fact, however, weather sharps will not be inclined to put too much stress on strict technical terms in recording the behavior of the worst December on record.

There can be no question about the cold wave of March 11-14, 1888. According to General Greely, it was not only a cold wave; it was genuinely a blizzard—that is, for at least two days after snow ceased to fall, the fierce northwest winds kept the air so full of snow that the sun was obscured. During this time it was not a snowfall; it was a terrific snow drive. On account of the violent gale winds which piled the snow in drifts ten feet or more in height, the observers of the weather bureau were able to make only an approximate measure of the snowfall. These estimates varied from 40 to 50 inches. Four or five days elapsed before the snow blockade was lifted and full communication restored. The losses to the railways and merchant marine aggregated several million dollars. At Delaware Breakwater only thirteen out of forty vessels escaped without damage and not far from forty sailors perished.

In weather bureau lore the movement of the snow, driven by gale winds, is the distinctive feature of the blizzard. Popular usage, however, does not always respect weather bureau traditions; and, in the East, the term is applied to almost every snow storm accompanied by high winds. The cold wave of March, 1888, was a blizzard, and one of the few that has occurred in the eastern part of the United States. In the western prairie states transportation companies are fully prepared for such storms; in the east they are not. But the storm of March, 1888, would have been rated as a violent blizzard in North Dakota or in Montana.

Whereas, stagnation of the air is the characteristic feature of the hot spell, very rapid air movements are

the feature that forms the beginning of the cold wave. Although not always is the cold wave preceded by a low barometer, yet pretty nearly every winter low is followed by a cold wave. The low barometer forms with a wind that whirls in a direction the opposite to the movement of the hands of a clock. In the progress of the whirl, moist air is brought from southerly to northerly latitudes. The precipitation of the moisture adds to the warmth; it likewise causes a further lowering of the barometer.

But the low barometer must fill. That goes without saying, and that is about the extent of definite knowledge in the matter. There is also something more than the mere filling of the depression in the air—namely an anticyclone, or whirl in an opposite direction. It is all this and something more. It is the descent of a great mass of very cold air, not only from high latitutes, but also from great altitude. The low barometer not only fills; it rises nearly as much above normal as its predecessor had fallen below normal. This is merely the fact. Explanations have been many; they also have been not much better than guesses.

This much can be said as to certain physical results: Because of the unusual velocity of the cold air, it penetrates nooks and crannies, driving therefrom dust, carbon dioxide, fetid air, and everything which causes putrefaction. Because of its high pressure, it removes unwholesome matter that would scarcely be disturbed by air at normal pressure. Because of the high potential of its electrification, dust particles that have been removed are rapidly and forcibly repelled from the surface of the earth. The cold wave is therefore the greatest scavenger in existence.

But what is there in that invigorating northwest blast —so different from the gentle southeast breeze which crumples one to about the consistency and activity of a jelly fish? Who knows? Chemical analysis reveals nothing. Oxygen is normal; ozone is slightly—very slightly—above normal; carbon dioxide and water vapor are below normal. One can easily bring the air of a living room to exactly the same content, proportion, pressure, and temperature as that of a newly-born cold wave—and then lie down in physical collapse.

What is there in the air of the cold wave to give it that blessed invigoration? The degree of humidity does not explain it. There is not the slightest evidence that a vivifying something akin to the vitamines of food substances exists. The ozone theory is about as valid and not so logical as a nitric acid hypothesis. If it is electric potential no one can demonstrate the faradage that produces the given result. But one thing only is known—namely, that the air of the cold wave is the greatest tonic in existence. And the good Lord has not permitted it to become the monopoly of a corporation!

Meteorological Laboratory.

Pseudoleukemia Infantum.

D. A. Roth, Panama, R. P., reports a case of pseudoleukemia infantum (von Jaksch's disease), and says that the existence of this as a distinct blood disease is still in dispute. The anemia is the constant feature, presenting the combined blood picture of pernicious anemia and leukocytosis or lymphocytosis While splenic enlargement is considered as an important diagnostic feature this cannot be said of it in Panama where chronic malarial spleens are common in children. Other children's diseases, and to a certain extent hereditary syphilis, have been found in association with von Jaksch's disease, and some observers have attributed to them diagnostic importance, but this has not been proven.—(*J. A. M. A.*)

MOSQUITOES AND MAN.

F. E. CHIDESTER, Ph. D.,
New Brunswick, N. J.

Mosquitoes have always been disagreeable pests and have prevented man from occupying some of the most desirable lands in the warmer regions of the earth.

They were long regarded as harmless and avoided on that account only because of their biting proclivities Since it has been proven that certain species of mosquitoes transmit malaria and yellow fever, determined efforts have been made to exterminate them. The number of diseases definitely traced to mosquitoes is relatively small but in all probability they are responsible for many more than those they are already known to carry.

In the United States mosquitoes transmit malaria and yellow fever. Malaria is a disease which is weakening but not usually fatal. Between 1907 and 1914 there were over 7,000 cases of malaria in the United States without a death.

There are three areas which are malaria zones in the United States. The larger includes the vast territory extending from the northern part of Maryland south to the Florida coast and from Kansas east to the Atlantic. The second area includes parts of New York, Connecticut, Rhode Island and Massachusetts.

The third area occupies the Sacramento and San Joaquin valleys of California. There is no portion of the country entirely free from malarial mosquitoes which are able to transmit malaria if the disease is present.

The salt marsh mosquito and the house mosquito are responsible for considerable discomfort and the low valuation placed upon property infested by them. The salt marsh mosquito is the more vicious biter, while the fresh water species include three known disease carriers.

The mosquito develops from eggs which produce water feeding larvae. The larvae moult and finally develop into pupae which do not feed but which form a growth stage and finally produce the adult mosquitoes.

The blood sucking female is the mosquito with which we are most concerned. The male does not bite. From the eggs of the female develop under favorable circumstances from 50 to 400 larvae which feed upon minute organisms whose development is fostered by filth, transform into pupae and then into adult mosquitoes, either male or female. Since in some other insects, a plentiful supply of food favors the development of females, it is highly probable that in the mosquito favorable feeding conditions results in the production of a larger number of the pestiferous females.

Mosquitoes require water for their development. The eggs are laid in water or wet mud which is either fresh or slightly saline. Stagnant water somewhat polluted is the most favorable for the fresh water species. In the case of the salt water species, rain water forming temporary pools of low salinity proves most favorable. Water left after high tides also furnishes the proper salinity for the development of certain resistant forms.

The eggs may remain dormant through the winter or if dried several months will hatch on being immersed in water. They will hatch in water of a relatively high salinity but above the optimum for the species, even the salt marsh forms will not develop, dying in the early larval stage.

The species of mosquitoes with which we shall first concern ourselves are the house mosquito (Culex pipiens Linn.), the white banded salt marsh mosquito (Aedes

sollicitans Wlk.), and the brown salt marsh mosquito (Aedes cantator Coq.), none of which is known to carry disease but all of them most important economically on account of their biting habit.

Culex pipiens Linn., according to Smith (1904) is "of medium size, deep yellowish to dark brown color, the legs and beak are not banded, and the abdomen has a narrow whitish band at the base of each segment. It is rather a slight species and not especially hairy—having, indeed, a lean and hungry look." The larvae have very long breathing tubes. They thrive in stagnant fresh water, especially that containing sewage.

The adult females hibernate in dwellings and lay their eggs in the spring, then die. This species is especially disagreeable to man as it breeds in great numbers, inhabits dwellings and is able to get though ordinary meshed screen.

Aedes sollicitans Wlk. is described by Headlee (1915) as follows: "A broad white band circles the beak; its feet are circled by broad white bands; yellowish white bands border the bases of the abdominal segments; a stripe of the same color extends lengthwise along the dorsal aspect of the abdomen; the thorax is golden yellow with silvery white sides." The larvae thrive in water of a relatively high salinity. The adults fly and are wind carried inland to a distance as great as forty miles. The insect passes the winter in the egg stage. This is a vicious biter and on account of its wide dispersal a tremendous pest in states having considerable coast line.

Aedes cantator Coq. is a large mosquito of a brownish color. The larvae develop best in water of a salinity a little lower than that favorable for Aedes sollicitans. Thus Chidester (1916) heavy rainfall favors the development of the species on the uplands; high tides favor the development of Aedes sollicitans on the lowlands.

Obnoxious as they are, the house mosquito and the salt marsh mosquito do not compare with the malarial mosquitoes when we consider the weakening effects of malaria and the great prevalence of the disease.

The malarial mosquito (Anopheles quadrimaculatus Say) is the form known to transmit malaria, but the mottled wing Anopheles, (Anopheles punctipennis Say) and the daylight Anopheles (Anopheles crucians Wied.) have been shown to be carriers of the malarial parasite under experimental conditions.

Anopheles quadrimaculatus Say. is brownish in color and has four brownish spots on each of its wings. When the female bites she elevates the back part of her body so that she appears to be standing on her head. The females of the harmless species do not thus elevate their bodies when resting or biting. The larvae of the Anopheles group are also distinguishable from the fact that they have a very short breathing tube and consequently bring their bodies to a position almost parallel with the surface of the water, instead of assuming the oblique position characteristic of other larvae when at the surface.

From 50 to 75 eggs are laid on the surface of the water and after about two days these split and the larvae emerge and feed on the spores of algae and on minute unicellular plants and animals. In from 7-14 days the larvae develop into pupae which are highly resistant to all sorts of environmental change and from which come the adult mosquitoes of both sexes.

This species does not fly far and on account of its habit of seeking shelter, is not widely dispersed by the wind.

Anopheles punctipennis Say. is distinguished from the other species of Anopheles by the presence of many black and yellow scales upon its wings and by the two large black patches and two slightly smaller yellow ones on the front margins of the wings. The larvae are not easily distinguished from those of Anopheles quadrimaculatus, the true malarial mosquito. As this species does not frequent houses it is not economically so important to man.

Anopheles crucians Wied. is a form which is known to harbor the parasite of malaria under experimental conditions but it is not considered an important carrier of the disease in nature. The adult lacks the wing spots characteristic of other species of Anopheles and there are only a few black scales along the front margins of the wings. The larvae of this species develop in water which is slightly saline.

Control of the Mosquito.

Fortunately for humanity, nature has provided enemies for every known pest. When man attempts to claim new territory, however, he is forced to supplement nature in reducing the number of his enemies.

Seasonal variation produces notable variations in the development of mosquitoes. A cooler summer than usual reduces the number of mosquitoes. If there be but little rainfall, the number of eggs which develop is considerably less.

In the case of the salt march mosquitoes a small amount of rainfall results in the marsh water from tides being so high in salinity that *Aedes cantator* does not develop so well. If evaporation be sufficiently rapid, the stronger species *Aedes sollicitans* may not survive the larval stage. The malarial mosquito *Anopheles quadrimaculatus*, while not primarily a salt marsh form, will develop in water of a low salinity. Dry weather will reduce the number of its larvae developing in salt marshes.

The natural enemies of the mosquito include a few plants and many animals.

Among the plants which are known to kill mosquito larvae are the bladderworts (Utricularia) and the parasitic bacteria and fungi. Besides minute animal parasites, the whole animal kingdom is at warfare on the mosquito. Insects, fishes, frog tadpoles, lizards, birds and the bat all prey upon the larvae or the winged adults. The fish are by far the most formidable enemies. Among the species of fish which are most valuable in the extermination of the malarial mosquitoes are the minnows Gambusia affinis and Fundulus notatus. The gold fish and several species of sunfish are also important enemies of mosquito larvae.

Human activities in the control of the mosquito are legion. The most important work is of course the elimination of possible breeding places. In attacking this problem it is found necessary to drain or oil almost all stagnant water. It is true that in a few cases swamp water has been found toxic to larvae, but as a general rule it is advisable to look to pools, rain barrels, eave troughs, undrained ditches and even tin cans and other discarded receptacles.

Treatment of pools not readily drained by covering with a thin film of fuel oil is quite effective. The larvae come to the surface to breathe and encounter the oil film at the surface of the water and are unable to survive the lack of air. Another excellent method of coping with the larvae is to stock the pools with fish such as goldfish, sunfish, or minnows.

In the case of some pools it has been found possible to kill the larvae by the use of inexpensive larvicides which pass into solution. Before the war various sub-

stances were in use which are not cheap enough to use now or else or not available. Soluble carbolic acid is quite effective but too expensive. Phinotas oil is very effective in catch basins. Common salt is good but too expensive for use. Chloride of lime is quite efficient.

In controlling the salt marsh mosquito the best methods are ditching to allow drainage and the ingress of the killifishes, stocking pools with the fishes and diking to prevent marsh inundations.

In repelling the invasions of adult mosquitoes various oils such as pennyroyal and oil of citronella prove quite satisfactory. The use of punk and tobacco smoke also drives the adults away. The best screens are quite closely woven, a 16 wire mesh screen being the one in most common use.

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POTATOES, FAT AND WATER.

CHARLES O'BRIEN,

AUTHOR OF FOOD PREPAREDNESS FOR THE UNITED STATES.

New York.

Fear of overstatement of the case led the author into error in an article on "Diet Reformation" in THE MEDICAL TIMES of December, 1917. This is a correction, brought by transatlantic mail.

In telling of the marvelous work in matters of nutrition done by Dr. M. Hindhede of Copenhagen a brief reference was made to a test conducted by him on two subjects named Madsen. It was stated in the article that they subsisted for over a year on "potatoes, margarine and *MILK*," meantime doing manual labor. The error was in mentioning "Milk" at all. It should have read *"WATER"*—"Potatoes, margarine and *WATER*."

To our corn-, wheat- and meat-fed population this would sound somewhat unbelievable. It was so much so to one of us, to wit, the author, that he unconsciously mentally corrected the truth and included the old reliable, milk. Water seemed too thin. But water it was. The error is pointed out by Horace Fletcher, a friend of Dr. Hindhede, who was a party to the experiments, in a letter recently received. Fletcher himself submitted to the test for over nine months, and says he felt no ill effects from the restricted and monotonous diet.

The writer had the pleasure of meeting one of the Madsens in Dr. Hindhede's laboratory in Copenhagen. He is a robust, healthy-looking, red-cheeked Dane, a gardener, which trade he plied during the experiment besides working about the laboratory. The test showed that on his meager rations of potatoes, margarine and *WATER* he experienced no material loss in health, strength or endurance.

It was doubtless as a result of the information gained from this experiment that Dr. Hindhede told the writer that he regarded the potato as coming near deficient in fats; hence the addition of margarine in being the perfect food, milk excepted. It is of course the diet prescribed in the experiment.

The test was not made to prove the efficacy of a vegetable diet, however, for Dr. Hindhede is not a vegetarian, but to show that the human can be adequately sustained on a low-protein diet. Hindhede's contention is that it is almost impossible to get too little protein, that mankind commonly poisons itself by eating much of the high protein foods, meat, fish, eggs, etc., and that ten per cent. of protein is the limit. Less than that is better. He contends that if the high protein foods are eliminated there will be found sufficient protein in the low protein foods to answer all requirements. The average of the latter is something like seven per cent.

So do not worry if the Food Administration cuts you down on wheat, meat, etc. Butter your spuds and take a drink of water. Chances are you'll feel better, be stronger and have more endurance. You may not believe it, but science says 'tis so.

Major Coe in Command of Mobile Operating Unit in France.

Major Henry C. Coe, M. R. C., who in private life is Professor of Gynecology in New York University, has recently been placed in command of Mobile Operating Unit No. 3 in France. This unit, which includes twenty surgeons and sixty enlisted men, is composed of a large number of automobile trucks and some tents and contains the latest and most up-to-date operating rooms, all on wheels. Its sterlizing plant is second to none in the stationary hospital and everything connected in this Mobile Unit is of the latest and most improved design. These units are used for operative work directly behind the front lines and Major Coe is doing wonderful service in giving the most advanced operative skill to our wounded soldiers.

On Memorial Day he wrote a poem which will long be remembered by those who know and appreciate the great soul of this remarkable man.

Resting.

Under the winter snow,
Watered by summer rain,
Where gentle breezes blow
In fair Lorraine.

Under the open sky,
They ne'er will hear again
The bird-songs, where they lie
In fair Lorraine.

Each in his quiet bed,
Free from all toil and pain,
Rest our immortal dead
In fair Lorraine.

Far from their land so dear,
Loved ones will wait in vain
For those who slumber here
In fair Lorraine.

Nobly they lived and died;
Oft shall men hear again
How they sleep side by side
In fair Lorraine.

No tears for them we shed,
All tears for them are vain;
Proudly we mourn our dead
In fair Lorraine.

Land of the brave and free,
Bound by the strongest chain,
We give our best to thee
In fair Lorraine.

Memorial Day, 1918. H. C. C.

A Brooklyn Surgeon "Over There."

We have been permitted to publish the following letter from an eminent Brooklyn surgeon now at the Front. It is a charming account of how one man happily adjusted himself to another world, as interesting for its naive revelation of a fine character as for its sidelights on the happenings "over there."—Editor.

To the Loved Ones at Home:

It is now almost a month since I left you and in that short space of time there have been crowded into my life years of experience—an experience possible only through the war.

First of all I hope that you are all well and as happy as the exigencies of life will permit, for, try to avoid the chagrins of existence as you will, they arrive. But how to begin "Ma petite histoire." You know that all letters are censored so it behooves me to be careful of what I write.

It required just eleven days to reach Bordeaux, from where I sent you a cablegram. The ship was filled to its utmost capacity—about 1,400 soldiers. I was the only naval officer on board. The personnel consisted of cavalry, infantry, Y. M. C. A. and Red Cross men, about thirty young women nurses, and a number of French officers returning from furlough, all of whom had seen service and been wounded at the front and decorated with medals for bravery in action. There were about 700 Poles, who had volunteered their services. They had been sent to Canada to be drilled, but as the U. S. Government at the time of their enrolment was without uniforms to equip them, they purchased from the Canadian Government discarded uniforms, the coats of which were of a brilliant red color. Of course these were to be discarded upon their arrival in France—to wear them at the front would be suicidal. Looking down upon the lower deck where the soldiers of the different units were crowded together, the melange of colors was wonderfully striking. As the men moved about there was presented a phantasmagoria of beauty and oddity. Upon pushing from the dock the troops were sent below decks to avoid observation by German spies. After passing Sandy Hook they were permitted to come upon deck.

I made one of four in a stateroom and we got along splendidly together. The space between the two double-deckers we occupied was so small we had no room to "scrap" and by taking turns in "turning in" and "turning out" everything turned out well for our mutual comfort. The weather all the way across was particularly disagreeable, mists, fogs, and rain every day until we reached Bordeaux. I rented a steamer chair and robe for which I had absolutely no use under the conditions which existed.

I remained in Bordeaux from Saturday evening until Monday noon. Bordeaux, as you know, is situated on the Gironde River and it is a beautiful city. Owing to its resemblance to Paris it is referred to as "Little Paris." My short stay was replete with enjoyment. It was my good fortune to become quite well acquainted with Mr. Young, the American Vice-Consul, and a couple of his friends—one of whom gave me an automobile ride through the famous vineyard district of France. We covered a distance of 60 miles. Each side of the road was lined with vineyards and every few miles there was a chateau and its surrounding village with its ever present quaint little church, many of them centuries old.

———— (our destination), a U. S. Naval Base, presented a scene of great activity. In its vicinity the Red Cross Society has established two hospitals, occupying for their purpose two magnificent old chateaux. You could not help but marvel at the beauty of their architecture and intricate mural decorations. The furnishings had been removed to give place to hospital cots. Both of these hospitals were for convalescent officers and men. The officers' chateau was without an invalid—the men's filled to overflowing. We had dinner in the dining room of one of the chateaux and I tried to conjure up the scenes of revelry which must have taken place on the part of the nobility of France in the same room, but the true nobility of life lay in the adjoining cots.

On our return we reached Bordeaux at about 9 P. M. Sitting in the smoking room of the Grand Hotel, enjoying a cigar after my long ride, I heard some one say: "Damn me, but I believe that's Doctor ————!" Turning in my chair to seek the source of this pious exclamation I recognized a Bay Shore boy named Tribken. My last recollection of him at the Bay Shore training station was that he was engaged in painting one of the barracks. The paint was about equally distributed on the barracks and on himself. At that time he was a petty officer. He evidently made good for he now has his commission as Ensign. Of a certainty we talked over our sham battles at Bay Shore. He gave me a lot of information about the boys now in aviation on this side. Some of them are flying at the front in France, a few in Italy.

The trip from Bordeaux to Paris is about 10 hours through a most entrancing country, which kept my eyes riveted against the car windows. I arrived at Paris at about 10 P. M., in the midst of a severe rain storm, and stopped for the night at a hotel which was practically a portion of the railroad depot. On the following morning I reported at the headquarters of the U. S. Naval Aviation Forces, Foreign Service, and was assigned to temporary duty in Paris. I need not tell you about the Paris I found—so different from the Paris I knew upon former occasions, because I am sure the press through our correspondents has given you many vivid descriptions of Paris as it is today. Let me sum it up in three words—*desolate, sorrowful, frightful.* There are but few women and children remaining and three-fourths of them are in mourning. After nightfall the city is like a vast cemetery, the buildings standing out of the darkness like giant spectres.

Recalling that a mutual friend had given me the address of Dr. David Ferguson. I made inquiries concerning his whereabouts and was told that he was the medical officer in charge of the Aviation station about —— miles south of here. He heard of my being assigned to this station through the Paris office and a few days ago I received a letter from him in which he sent his regards to all of you. It is possible that we may meet some time during the summer on one of my inspection trips. My first week in Paris was spent at the Hotel Grand Palais—officers only received as guests. The food, cuisine, and bedrooms left nothing to be desired.

I do not believe that I can add anything to your knowledge of the night attacks of the long distance cannon and airplane raids, as you have more knowledge of what is going on in the war zone than we who are in France (excepting those at the Front in actual conflict), since the French papers allude as briefly as possible to the actual occurrences, whereas our correspondents give out as much as they possibly can. However, I had some experience of war living right in the immediate vicinity of the line of fire of the cannon and falling airplane bombs. The attacks were always made at night, commencing at about 11 o'clock. The approach of the invading planes would be made known by various means to the Parisians, who were expected to seek at once the nearest arranged shelter —those not in the street in the cellars of their homes. Before the planes would appear the "barrage" fire would commence.

Paris is surrounded by forts and from every cannon shells would be shot forth and explode high in the air, and it would be seldom that more than one or two of the invading planes could get over this encircling fire, into the city. I could not resist the desire to see it all and while all the other inmates of the large apartment house were in the cellar I stood out on the balcony watching the exploding shells, some fragments of which fell in the street below me. Of course thus exposing myself was foolhardy, but I have never been able to separate myself from that proclivity. To digress "un peu." You see I drop into French as readily as did Silas Wegg into poetry, for, as the French say, I now speak French "comme une vache-Espagnole"). As my duties were light I adopted a delightful way of studying "la langue francaise"—no other than exchanging conversation leçons with a young French woman. It all came about in the following manner.

The proprietor of the hotel said to me one morning: "Doctor, how would you like to exchange conversation leçons with a young French girl? Her mother called here in person yesterday and explained that her daughter was about to take her examination for her baccalaureate degree and was desirous of perfecting her knowledge of oral English." "Ye gods!" I replied, "what an opportunity." So, armed with a letter of introduction, I presented myself at the apartment of Madame L——. The concierge informed me that Madame L—— was at home—fifth story front.

In due time I arrived, a little winded, it is true, but wearing an appealing smile. I presented my letter of introduction to madame. The appealing smile won—madame must have considered me "comme il faut," because she returned the smile and said, "Seet dow-an, Monsieur," and vanished for about ten minutes, returning with a—at this point I am sure you expect me to add—dazzlingly beautiful young lady—but no, truth before sentimentalism—the daughter was just a demure, plain looking, rosy-cheeked, neatly dressed girl of about nineteen years, with fluffy, light brown hair and large, timid blue eyes. Her knowledge of English was better than my knowledge of French, but we both would insist otherwise. I was to call three evenings during the week at 8:30 and remain until 10 It was all very interesting, very funny and awfully proper. I would call, be welcomed by the father, mother, brother and

finally by madamoiselle. Then we would all be seated, the mother on my left, the daughter on my right and her father on her right, and the brother in the rear. I did not feel the additional members of the family added materially to my acquisition of French, but I should have been satisfied to be thus intimately admitted to the family circle, or, in other words, to be encircled by the family. How we progressed is too long a story. I have already written more than a page simply to introduce an incident attending one of the nightly raids of the Gothas.

We were all seated in the order mentioned one evening. At about 10 o'clock we were volleying back and forth French and English when the alarm sounded. Like a flash the family L——— were on their feet (except the brother, who fell over backwards), the mother crying "Au cave! Au cave, Docteur!" (To the cellar, Doctor.) I asked to be permitted to remain. The father remained with me, and from the window we viewed the falling fragments of the shells from the barrage fire. In about two hours the raid was over; the recall signal sounded; the cave dwellers returned. Tea, war bread and cheese were served, after which I took my way homeward through the dark and deserted streets of Paris. As I left Paris a few days afterward I did not see the L———s again, but have since received a letter from the father (forwarded to me) asking why I had ceased calling. I feel that I have made considerable progress in French, for occasionally in my English conversation I will unconsciously interject a French word.

Sunday, June 2, at 2 P. M., I received orders to proceed to ——— and report to the commander of the U. S. N. Forces in France for duty at the U. S. Naval Air Station, with additional duty at ——— and ———, with repeated travel between stations. I have under medical charge a Naval Air Station of which the complement of officers will be 62.

My headquarters is a naval base. It is marvelously interesting place, although the city itself is a big, dirty and disagreeable town in many ways. The weather here is abominable. I have been wearing my winter underclothing, and in addition the sweater that Alice knitted for me. The interesting features of this place are centered in its military aspect. The arrival of our transports is an inspiring sight—ships from my quarter of the globe enter here. But to me the streets filled with soldiers from my own country is fascinating. The uniforms of the sailors and soldiers are a constant source of admiration mingled with disgust—because of the neatness and smartness of the American and French sailors and soldiers in contrast with the dirty, slouchy appearance of the Algerian and Portuguese troops. The Algerians, if not so dirty, would be picturesque with their turbans and long, flowing white mantles. Then the costumes of the Bretons—civilian men and women: The men wear flat, broad brimmed hats with a wide velvet band clasped behind with a large silver buckle, with two streamers hanging midway down their backs; the women, young and old, wear all forms of lace caps, generally dress in black, tight bodices, with heavy skirts ballooning out from the waist and extending down to their wooden shoes. The young women are the picture of health, but I have yet to meet one that you could call pretty. The elderly and middle aged show the effects of labor in the fields, in their wrinkled and care-worn faces. So much for ———

Reverting back to matters personal and to Paris, I met my old time friend, Dr. Paul Mazzuri, who has changed but little. We had several very pleasant evenings together in restaurants in the Latin quarter, in which we had dined twenty years ago. Dr. Victor Robertson I also met just prior to his departure for New York and I gave him a message (verbal) to deliver to you. Dr. Alex Lambert of New York City had just left for America when I arrived and I regretted missing him very much, but called upon Mrs. Lambert, who is engaged in good work. I came in contact also with two more boys from Bay Shore who are now with me on this station in charge of the balloon service.

I come in almost daily association with the highest officials in the American, French and English Navies, and find them all most cordial. I am afraid I will be spoiled for civil life hereafter. This life appeals to me so strongly "mais mes beaux jours sont passés." We have an officers' mess on the camp site—our rooms elsewhere. I have been remarkably fortunate in my selection. I have a large room in a chateau on a bluff overlooking the camp and harbor. There is a terraced garden with all kinds of flowers, fruits and vegetables, rustic benches and rustic houses. It is the summer home of a French rear-admiral who is now on a French battleship. Two of his sons are also officers in the navy. A third one is a student at a college here in ——— and expects to graduate next month. There are two daughters, both volunteer nurses, one at the front, the other in a hospital near Paris. The home is kept by Madame L———, two servants and a gardener. The oldest son, a lieutenant, is in charge of a flotilla of mine sweepers and comes home every week for a few days. French only is spoken in the house. Madame looks after me as if I were one of her sons and always addresses me as "Pauvre Docteur" in a sympathetic tone. Last week I had my first ill day—one of my old attacks of indigestion. Madame was up twice during the night with me—entirely unnecessary, but she seemed greatly concerned and wanted to do something to help me. I was all right the next day. I am the only pensionnaire and am charged but a nominal sum.

I called one day in search of a room, not knowing how high the personage was who inhabited the house. The concierge told me that it was a private home, but as I insisted upon seeing the mistress my name was sent up. The madame smiled when I made my desire known, and said that she had a husband, two sons and two daughters fighting for France, that the house was almost empty, and that as I was an American officer giving my services to France, the least she could do for me would be to take me in—"voila!" As you know, the French cannot buy white bread or wheat flour, so every Sunday I buy a loaf of bread from the mess and present it to Madame. You might imagine from her expression of thanks that I was presenting her with a diadem of diamonds.

There is nothing I need but what I can purchase here from the canteen or in the city.

The officers are without exception congenial fellows, quite as much so as my associates at other stations. We get very little news of the outside world and the most meager war news. The French papers devote just a few lines each day to the most important events. I wish you would send me the Sunday *Times* so that I can keep in touch with what is going on. I was never more contented in my life. My health is splendid. I just feel like a different person. My old buoyancy has returned and I sleep soundly every night.

God be with you till we meet again.

Correspondence

Sex Determination.

To the Editor of the MEDICAL TIMES:

I attend the meetings of the American and of the Canadian Medical Associations and I read the journals of both societies. At the year's meetings and in recent numbers of the journals, time-worn guesses at the causes of sex-determination have been reviewed. I should like to advance a fresh guess. Should any colleagues report the experiment, which this memorandum records, it is hoped that they, also, will make their experience public.

It has often been suggested that each ovary or testis bears only ova or spermatazoa of a single sex. For reasons unstated, the male-producing organs are usually said to be those of the right side. Consequently, it has been asserted that male progeny can be secured by bringing together germ cells originating from the male-producing ovaries and testes. To do so, devices ranging from suppression of an organ to nuptial posturing have been advocated; all have failed. The premise on which they are based is wrong—unnatural. Nature doesn't put all her eggs in one basket; that there is constancy in the side carrying masculine germ cells is disproved by the long list of persons who have parented both girl and boy babies after the loss of an ovary or of a testes.

It has been suggested that the ova alone, and not the sperm cells, determine sex and that they ripen and leave the ovary, alternately, masculine and feminine in nature. The validity of the suggestion could be tested experimentally, *in corpore vili;* but, experimentation seems scarcely called for until facts are adduced in support of a theory so mechanical.

It has been suggested, with greater verisimilitude that food determines the sex of offspring. Schenck, for example, pretended to secure male children by controlling mothers' sugar ingestion.

Coincidence, occasionally, has brought apparent confirmation to each of the theories just outlined; but, by the application of none of them has it been possible uniformly to secure progeny of a desired sex. The theory which this memorandum exposes has inherent probability and, in one experiment, sons desired were born.

That the sex of the resulting adults can be determined at will, by variation in the food of bee-larvae is certain. That this circumstance may not be unique and, *mutatis mutandis*, may be a constant vital phenomenon, offends no sense of biological probability.

Study of unclean changes during the maturation and copulation of germ cells has, with fair certainty, shown these things; chromosomes identifiable by peculiar and constant morphology occur; it is not improbable that certain chromosomes contain female protentiality and that certain other chromosomes contain male potentiality; the polar bodies, extended by male and female cells in marosis, contain half of the sex substance of each combining cell; the copula formed by the union of ripened spermatazoon ripened ovum receives chromatin from each parent.

It is possible that the future sex of the copula may be determined during the actual nuclear fusion of the parent cells; I hold it more probable that, like a larval bee, the copula, while still a single cell, possesses indifferent sex protentialities and that these potentialities are determined during the first few cell divisions by the nature of the fluids surrounding the new being. From these fluids it obtains its food until, in the mammal attachment to maternal tissues is established.

The situation in my own family first led me to marshall these considerations. During ten years of married life my wife and I welcomed four daughters. Our circumstances made it desirable that there should be but one more conception, if any, and that it should produce a son. We decided to make no essay unless some probability of obtaining male issue could be ensured.

Two questions, therefore, presented themselves. The first was—what are the fluids which usually touch germ cells? The second was,—which of these fluids, in presence or in absence, seemed in our case to be associated with the development of female children?

Introition need not be complete for fruitful coition; spermatazoa deposited in the vulva may find their way, by their own mobility and after days, to the uterus. It is, consequently, possible for a human copula to be composed of elements which have been, or are, in contact with seminal liquor, and with vaginal and Bartholmian secretions in addition to secretions from the uterus and fallopian tubes.

When introition is complete, semen is ejaculated into the *os cervicis*. When coition sufficiently excites, the woman, like the man is subjected to orgasm. Under these circumstances, spema cells enter the uterus at once; they touch, then, only whatever juices complete bi-sexual satisfaction may collect in the uterus—they come in contact with no part of the lower female genital tract.

Each of our marital encounters had resulted in a perfect female child. In each instance, it was not until the third or fourth ejaculation that touch was established between *os* and *glans* and that orgasm occurred, if at all, in the female.

We could not compare our observations with those of acquaintances. Such things are not mentionable in personem; hence the careful anonymity of this communication. Nevertheless, general knowledge of friends' characters and, especially of three pairs of parents who have families of four, five and six girls, without boys, and much to support a suspicion that female children were likely to follow coitus ending prematurely. There were always many more girls than boys in families where it seemed likely that the fathers were vivacious and the mothers of slower temperament.

We determined to test our suspicion. An encounter was so manipulated that, from the first incident, semen bathed the mouth of the uterus and female orgasms accompanied but commenced just before those of the male. The resulting conception produced a pair of beautiful boys.

The observation is interesting and deserves repetition. Even though the observation is isolated and the argument leading up to it incoherent and riddled with *lacunae* I confess that I shall watch the pages of this journal with much interest for the relation of others experiences.

N. E. MINE.

A. J. Scott, Jr., Los Angeles, after referring to the rarity of agglutinin response after army triple typhoid vaccination, and gives charts which he says are almost self explanatory. They are the more typical and instructive ones of a group of thirty and represent graphically the variations of the typical and paratyphoid agglutinins under the influence of antityphoid vaccination as formerly and at present administered by the army He finds that definite agglutinins for all three organisms develop after the use of army vaccine and are equal after alternating doses and triple vaccine. The methods are equally effective and the latter has the advantage of being time saving Prior vaccination has the effect of repressing agg'utinins for the specific organism and fluctuations in the agglutinin content occur after vaccination in normal cases, and have little diagnostic value in cases of fever. He finds no relation between the systemic and local reaction, after vaccination, and the units of agglutinins produced.—(*J. A. M. A.*)

Diagnosis and Treatment

The Superior Longitudinal Sinus in Infants; Its Value in Transfusion, and for Rapid Medication; Its Adaptability for Procuring Blood for Diagnosis.

Louis Fischer of New York presented this subject to the Section on Diseases of Children, American Medical Association, at the last meeting. He said the anatomical position of the longitudinal sinus beneath the anterior fontanel, renders it very accessible in an infant up to the end of the second year. Its large size is another factor which aids in giving an infant the benefit of diagnostic and therapeutic measures which otherwise are difficult to obtain.

By the use of this sinus we have a direct channel through which a large or small quantity of blood can rapidly be taken from, or added to the circulation. Since time counts a great deal in depleted and marasmic infants, the simpler the route the more advantageous to the infant.

Many obscure conditions exist in which intestinal intoxication and faulty metabolism of the food elements is diagnosed. Before a positive diagnosis can be made, if a luetic basis is suspected, a Wassermann or Noguchi reaction may be required.

The longitudinal sinus is also adapted for the abstraction of blood as in venesection during convulsions. The relief afforded by this means is rapid and does not produce shock. Intracranial pressure can be relieved quickly and this method of local depletion serves as well as a lumbar puncture. It is a most convenient place to give salvarsan injections. In septic diphtheria where rapidity of action is necessary to bring the antitoxin into the circulation, the sinus route is indicated.

In hemophilia, Peterson reports six transfused cases, one of these through the sinus route with excellent result. At a hemostatic, human blood acts in many instances rapidly—almost specific. In a hemophiliac infant following circumcision, 2 ounces of blood injected into the sinus checked the hemorrhage within twenty minutes, although the infant had bled for four hours prior to this treatment. In another case of continued hemorrhage following an excision of cervical glands, post operative treatment was unavailing until one ounce of human blood was injected by the sinus route.

Dextrose solution may be injected by this route. Sodium bicarbonate solution may also be injected in cases of acidosis. Normal saline solution and steril serum may be injected during or following atrophic conditions due to entero-colitis. Such injections may be repeated once in twenty-four hours without producing shock. The first injection of 100 cubic centimetres may be followed by one of 150 cubic centimetres, and later 250 cubic centimetres may be injected every twenty-four hours until good stimulation is produced.

The shock incident to the exposure of a vein, and the loss of time are factors which one must bear in mind when an easier, safer and more rapid method offers itself. The risk of infection if one exposed the jugular, femoral or median basilic vein must not be overlooked, especially in the weakened and puny infant.

Technique.—The infant should be wrapped in a mummy bandage, well pinned so that the arms and legs are confined, and placed flat on its back on a table. The head should be steadied on both sides by an assistant while the needle is inserted into the sinus. Anatomically the sinus does not vary. It grows wider towards the back of the head, hence, we should always utilize a point as far posteriorly as possible. As the needle is pushed through the posterior angle of the fontanel it should be directed downward and backward in line with the sagittal suture. The landmarks are positive, and with but little practice we cannot fail to enter the sinus.

As the sinus lies very superficial we need not go deeper than one or two millimetres. For this purpose a needle one-half inch long of a 20 to 22 gauge with a sharp point is best adapted. For withdrawing blood a Luer or Record syrings should be attached. As the needle penetrates the sinus, resistence is lessened, and we encounter the same sensation which we feel when the needle enters the dura in doing a lumbar puncture.

We are now ready to aspirate sufficient blood for diagnostic purposes, or to transfuse the required quantity of blood or medication. As there is negative pressure within the sinus, before injection, it is better to withdraw blood, thus making sure we are actually in the sinus. The fluid is best given by gravity. A cylinder with a capacity of 30 to 100 cubic centimetres may be used. One end of a piece of rubber tubing is attached to the cylinder and the other end has a connecting tip which fits into the needle. It is of advantage to have a stop-

cock either at the end of the cylinder or near the end of the tubing. The needle is inserted with a small syringe attached. By slight aspiration one can determine whether the sinus has been entered, if so, the syringe is detached, and the apparatus which has been filled and the air expelled, is connected. Air pressure in the tube should be released by detaching the syringe before the needle is withdrawn.

A Hitherto Undescribed Sequel to Measles.

Capt. William L. Vroom, M. R. C., relating, some observations relative to forty-two cases of so-called Bronchopneumonia following immediately upon an attack of measles, says that some of the cases in this list did not develop all the cardinal symptoms of this so-called bronchopneumonia, and neither did they in their progress pass beyond the border-line where the prognosis was generally bad, and the outcome largely fatal. However, each case presented a sufficiently large number of diagnostic symptoms to indicate distinctly the presence of this post-measles condition.

In each instance the early course of the attack of measles was uneventful, pursuing the classical course with headache, rise of temperature, cough, conjunctivitis, and measles eruption over the face and body.

Upon the sixth or seventh day from the advent of the eruption, the temperature having reached about normal, and in some cases a normal temperature having pertained for two or three days, the patient suddenly developed a sore throat in the nature of an acute pharyngitis; red, engorged and painful, a marked aphonia, a sharp rise in temperature to 103° to 104° F., and pronounced **epistaxis.**

Large moist broncnial rales in both lungs became evident early, accompanied with very acute pleuritic pain, usually in one side. In those cases that eventually pursued a severe or fatal course, fine crepitant râles became evident on about the second day, followed with an effusion into one or both pleural cavities; at first serous in character, but with a tendency rapidly to become purulent. Percussion gave no evidence of pulmonary consolidation, nor did post-mortem findings reveal such.

Expectoration from the first was profuse, yellow, glairy, with not the tenacity of that of lobar pneumonia; it was very markedly streaked with bright blood, and was not blood-stained. In those severely ill, the expectoration became scanty and rather frothy in character, upon the third or fourth day, and the fine crepitant râles remained pronounced.

Cyanosis was a symptom very early manifested, appearing upon the second day after the sudden rise in temperature, showing itself in blueness of lips, face, nails, of the skin about the neck and of the extremities.

The patients complained of a tightness across the chest and would allow themselves to be moved in bed only under protest. The lips became indented and covered with brown crusts.

The pulse-respiration ratio was 1 to 3. The blood-pressure registered 90 to 95 systolic, and 60 to 75 diastolic.

From clinical observation the small bronchial branches seemed to fill with secretions causing a very significant dyspnea with feeble breath-sounds, and the large moist râles so early heard. In the severe cases, the fine branches and alveoli themselves became implicated, giving occasion for the fine crepitant râles heard only in this class of cases.

The pleural effusions occurred early, often upon the second day. The cyanosis, often an early symptom, had every evidence of being a resulting carbon di-oxide poisoning from the failure of the highly congested and inflamed pulmonary alveoli to functionate in exchanging carbon di-oxide for oxygen. This was particularly exemplified when upon administering oxygen the cyanotic appearance was not even temporarily relieved.

The cases that did not survive, generally died within the first week; those that lived, have passed through a slow and tedious convalescence, the fine crackling râles slowly disappearing and the cyanotic condition passing away. The aphonia has been quite persistent.

In many of the cases the pneumococcus was not demonstrated in the sputum.

The post-mortem findings showed intensely engorged and congested lungs which, upon section, presented a very dark-red appearance, in some instances almost black, and upon pressure, air could be pressed from the alveoli and tubules, but not much of accumulated secretion. Portions of pulmonary tissue would float in water, and there was no indication of consolidation.

The bronchial tubes, upon section, were of a dark brick color, intensely congested, granular in appearance, and hemoglobin stained. Generally the entire lungs were found in this condition, although in a few cases a lobe or so, partially escaped.

The pleural cavities, one or both, contained fluid; the dry side generally showed pleuritic adhesions, the side containing fluid much plastic exudation, and the fluid was sero-purulent or sero-sanguineous.

The aspirating needle showed a pleural effusion in 35 per cent. of all the cases under observation.

The pathological and bacterial findings have not been worked out sufficiently for presentation.

The mortality occurring from these so-called bronchopneumonia cases was 27 per cent.

If one will compare the condition as here described with a case of bronchopneumonia as ordinarily understood, one will, by contrast, see the distinctive symptoms and unusual fatal progress of this affection.

The following are characteristic features of this unusual complication:—

1. Note, the apparently uneventful course of the preceding attack of measles;
2. The suddent advent of this secondary condition of infection;
3. The early cyanosis and epistaxis;
4. The relatively early effusion into the pleural cavities with a decided tendency to the development of empyema;
5. The very apparent inability of the air-vesicles to perform their function;
6. And the tendency to pursue a very rapid and fatal course.

As regards a line of treatment, it is significant that all means used failed to show evidence of any effect whatever, in staying the progress of the affection. Only those cases not developing deep pulmonary involvement or pleural complications, slowly recovered. Those developing empyema were given the benefit of operative procedure; but in the cases in which the alveoli of the lungs became unable to perform their function, remedial agents utterly failed. In the light of our knowledge elicited from observing the progress of these cases, it was suggested by Captain W. A. N. Dorland that in a future epidemic of like nature, transfusion of blood from a measles immune be performed at an early moment, and if possible, before the symptoms of pronounced alveolar involvement become evident.

The Early Diagnosis of Sciatica.

The clinical and medico-legal recognition of sciatica is not infrequently attended with considerable difficulties, especially when, being as yet in an early stage, definite objective symptoms of atrophy and hypo-reflexivity are wanting. This problem, owing to present war conditions which have increased the number of cases suspected of malingering, has thus become more urgent and important, and new and more accurate researches on the subject assume a greater interest. Dr. Andrea Roccavilla has recently (*La Riforma Medica*, Feb. 23, 1918) described several new signs which may be helpful in forming an accurate diagnosis in doubtful cases where the usual classic symptoms are absent or not as yet fully developed. We give a résumé of the more important of them:—

1. Painful hypersensitiveness in the testicle of the affected side. In cases of true sciatica there is marked hyperalgesia on pressing the testicle between the fingers, evidenced as genuine by pupillary contraction, increased pulse-rate, and arterial hypertension. It is more sensitive than the evidence obtained by pinching the adductor muscles of the thigh than the so-called Gibson's sign, exaggeration of cremasteric reflex, although it is in direct physiological relation to them.

2. Sacro-coccygeal tenderness by digito-rectal examination. Pressure on the pelvic wall on the affected side by the finger in the rectum causes pain, more intense than that produced by pressure on the first and second sacral spines or on the femoro-gluteal fold and along the course of the sciatic nerve (signs of Trousseau and Valleix).

3. Diminution of electrical resistance in the limb. Each leg is sucessfully immersed to the same level in a bath connected with one electrode, the other electrode being in contact with the limb under examination. The difference btween the resistance of the affected and healthy limb may be as much as 5-6 milliamperes. In less severe or early cases the variation between the two limbs is less evident, but the proportion of cases in which this sign is positive and appreciable (2-3 milliamperes) is as high as 7 or 8 in 10, and the importance of the symptom lies in its being objective.

4. Popliteal hypo-reflexivity. External and internal popliteal reflexes can be elicited by striking with a clinical hammer the tendons of the semi-membranosus and semi-tedinosus muscles on one side and those of the biceps femoris on the other, about two fingers' breadth above the middle horizontal line of the popliteal space. The importance of the investigation of these reflexes lies in the fact that whereas these three

muscles are supplied by branches from the sciatic nerve, the reflex spinal center is at a higher level than in the homologous achillar tendon reflex, which may be of value from the point of view of early or doubtful diagnosis. But the popliteal reflexes in sciatica do not invariably follow the general rule of hypo-excitability, for exceptionally and especially at the onset of the disease they may, like the achillar reflex, be exaggerated; this period, however, is of short duration, for even before signs of neuritis appear the popliteal reflexes become progressively feeble and finally abolished. Contemporaneously with this period of onset a curious penomenon may be observed, which consists in a simultaneous existence of a popliteal hypo-reflexivity with a patellar hyper-reflexivity, so that a very slight stimulation of the upper tendinous boundaries of the popliteal space produces a marked extension, instead of flexion of the leg on the thigh (inverted reflex)—i. e., the stimulus is propagated to the patellar tendon instead of exerting itself on the tendons struck.

5. Dissociation between the idiomuscular contractility of the gastrocnemii and the achillar tendon reflex. This sign is evidenced by a contemporaneous hypo-excitability of the Achilles tendon with an idiomuscular hyper-excitability of the belly of the gastracnemius, as shown in flexion of the leg on the thigh following percussion on the lower part of the muscles, so that while mechanical stimulation of the Achilles tendon does not produce the usual extension of the foot, or does so in a very slight degree, analogous excitation of the muscular mass determines a flexor reaction of the leg to a much greater degree than normal. The importance of the sign lies in its early appearance and in the fact that it is most evident precisely at a time when the majority of the other symptoms have as yet to reach their full development.

6. Behavior of the small reflexes of the foot. These show early appreciable modifications, in that, after a period of transitory hyper-excitability, which coincides with the initial phases of the disease but which may be altogether absent, they undergo progressive enfeeblement until their complete disappearance. This occurs in about 7 cases out of 10.

Dr. Roccavilla furthermore draws attention to the following important facts. In the cases where the lesion, instead of being total or truncal, is purely fascicular or of the ascending type, then Lasègue's crossed sign and Gibson's are not very marked, whereas Gowers's sign and those relating to the Achilles tendon and small muscles of the foot and plantar hypo-reflexivity are strongly so. Vice versa, in cases where are sciatica is truncal and descending there will be prominence of Gibson's and Trousseau's signs, hyper-albuminosis and lymphosytosis of the cerebro-spinal fluid, rectal hyperthermia and hyperalgesia, testicular tenderness, adductor phenomena, hypotrophy of the thigh, and popliteal hypo-reflexivity.—*Lancet*, Ap. 20.)

Heliotherapy in Tuberculosis.

Edgar Mayer, of Trudeau, New York, reports the results of heliotherapy in tuberculosis obtained at the Trudeau Sanatorium. A quartz mercury lamp was used as a substitute for sunlight. Because of the cold climate it was impossible to expose the whole body, a procedure which would probably have yielded better results. Instead, the method of Bach was followed in which gradually increasing exposures are given on the back and chest only.

Of the thirty-one cases there were five among those receiving the full treatment that showed marked improvement that could be traced directly to the lamp, namely, disappearance of cough and expectoration, gain in weight, increased appetite and loss of fatigue. Five showed decrease of a previously prolonged cough and expectoration. Seven showed no changes of any kind. Four showed elevation of temperature after a few treatments and stopped them. One developed a temperature of 100° F. and a dry pleurisy. One expectorated a dram of blood. In one the psychic effect only seemed worth while as it could not be obtained by other means. One developed bacilli in the sputum and increase in pulmonary signs. All these untoward developments were easily accounted for by conditions and factors other than the heliotherapy. Three noted beneficial results in the interim between courses of exposure, namely decreased cough and expectoration, and gain in weight, strength and appetite. One mentioned that she felt better than for four years, having less cough, decreased nervousness, better strength and a gain in weight of 77 pounds, although she had previously had the greatest difficulty in gaining weight. Two had improved appetites and better digestion. The commonest complaints from the exposures were pharyngitis, probably due to the ozone, itching of the skin, and sleeplessness. If elevation of temperature occurred it averaged 99.2° F.

Improvement corresponding to pigmenting power. Brunettes improved more than blondes. Some blondes tanned under the lamp who had never done so in sunlight. If exposures are overdone burns will occur, or there will be repeated peeling of the skin without pigmentation. Reddening began about the third treatment and tanning about the seventh. During the longer exposures the pulse rose in some cases fifteen beats, but came done again the next day.

The results appear on the whole to be indifferent. The psychic effect seemed to be of great importance and might in itself make the treatment worth while. A few exceptional cases showed marked improvement directly due to the light exposures.

Mayer concludes that light therapy is certainly a valuable adjuvant but must be used together with the usual routine treatment. In bone and joint tuberculosis, results have been most remarkable, with the closure of sinuses and both the healing of joint lesions and the re-establishment of function. Almost equal success has been met with in tuberculous disease of the skin, mouth, glands, pleura and peritoneum. Occasional disappearance of the definite and marked disease of the ocular and genito-urinary apparatus has occurred. In laryngeal cases some few favorable results were obtained, especially by the direct application of light to the focus. Finally, in pulmonary tuberculosis, in a very few selected instances, definite favorable results were obtained that had to be considered as due to this therapeutic aid and which no other means of treatment alone was able to offer.

A review is given of the physical and physiological facts and theories involved, of the various methods of carrying out the treatment and of its effect in the various forms of tuberculosis.—(*Am. Rev. Tub.*, 1918, 1, No. 11.)

Erythredema.

Under the name of erythredema, Dr. H. Swift, of Adelaide, describes a condition occurring in infants, characterized by swollen bluish-red hands and feet and disordered digestion, followed by noticeable muscular weakness. Dr. Swift has seen 14 cases in all, the youngest being aged 6½ months, the oldest 15 months.

The condition seems to commence with digestive disturbance with very marked anorexia. The bowels are generally opened three or four times a day, and the motions are greenish and contain undigested food particles. Sleeplessness is also common and the infant is usually restless and fretful. After a few days a characteristic appearance of the hands and feet develops; they are noticed to be swollen, bluish-red, cold and clammy, while the skin of the palms of the hands and between the fingers and toes is often sodden and desquamating. The skin of the trunk is sometimes covered with a fine papular discrete miliaria. The temperature is subnormal as a rule, the pulse is small, compressible, and rapid, and the urine is scanty, pale-straw colored, containing excess of phosphates but no albumin. The tongue is pale and coated with a slight streaky fur; the abdomen is flaccid and retracted. No abnormality was detected in the blood in the cases examined except slight diminution of the number of red blood corpuscles in one case. Blood cultures have invariably proved sterile, and no diphtheria bacilli were found in swabs taken from the nose, throat, and ear. There is general wasting of the muscles, most marked in the larger muscles, such as those of the thigh, but no actual paralysis has been observed.

The prognosis in this condition is favorable, though convalescence is very slow, months often elapsing before recovery is complete. Dr. Swift discusses the diagnosis of erythredema from multiple neuritis, erythromelalgia, Raynaud's disease, and congenital heart disease. In regard to treatment, he urges the necessity of first finding some food that the infant will take and digest, often a matter of difficulty owing to the extreme distaste for food, which is one of the features of the disease. He advises great care in regard to the toilet of the skin, and recommends warm clothing. Massage to the limbs should be commenced as soon as possible. For the diarrhea castor-oil, or small doses of grey powder, followed by bismuth, should be given. Calcium lactate in 3-grain doses three times a day seemed to be beneficial in some cases, in others it failed. In other cases ½-grain doses of thyroid gland of ¼-grain doses of pituitary extract were given. It will be of interest to know if cases of similar character have been observed in this country.—(*Lancet*, April 27, 1918.)

Agglutination Method of Diagnosis.

Capt. H. M. Perry, R. A. M. C., says that a large experience of the agglutination test in enteric fevers has made it evident that the method must be accorded a very prominent position in the laboratory diagnosis of this group of diseases. This is more especially the case since the introduction of preventive

inoculation with the triple vaccine, as the isolation of the infecting organism from the blood, fæces, and urine has become more difficult. The complexity in diagnosis caused by the presence of inoculation agglutinins has been simplified by the standardization of the test as illustrated in the technique devised by Dreyer. An attempt at making a diagnosis on agglutination results by any method other than a repeated and accurate titration of the agglutinin content of the serum does not appear feasible, and the use of standardized agglutinable cultures in this connection is obvious.

Regarding the value of the test in all cases, the opinion which has been formed may be summarized as follows:—

1. *Positive results.*—Presuming that the technique is carried out by a skilled and careful worker, a change in titre of 100 or 200 per cent., manifesting itself in a regular curve and reaching its maximum between the sixteenth to the twenty-fourth day (in exceptional cases as late as the thirtieth day) justifies a diagnosis of active enteric infection.

In many cases it is possible to determine exactly which organism is responsible for the infection, because the rise in titre for one organism is so markedly accentuated. Cases of enteric infection are, however, met with in which a rise or fall in titre for all three organisms occurs synchronously and equally; in such cases it is impossible to identify with certainty the member of the group causing the infection.

2. *Negative results.*—Cases which are clinically classified as belonging to the enteric group at present occur in which not only do repeated bacteriological examination fail to isolate an organism, but in which agglutination readings are so absolutely level or exhibit such slight variation that they afford no help in confirming the clinical diagnosis. Presuming that such are true cases of enteric infection, the failure to confirm the clinical opinion by agglutination findings may be due to one of the following causes:—

(a) Possibly, but not necessarily as a result of inoculation, the character of the infection may be so mild that agglutinins are produced to such slight extent as to cause a variation in titre which is not diagnostic. As an illustration of this point the following case of a mild typhoid infection in a non-inoculated subject may be quoted.

The case came under observation on the fourteenth day of the disease, an agglutination test made on the same day showing standard agglutination for *B. typhosus* in a dilution of 12.5 (2 units) only. No agglutinins were evident for *B. paratyphosus A* or *B.* The test was repeated on the twenty-first day of the disease and gave identical results. During this period *B. typhosus* was repeatedly isolated from the fæces. A mild relapse occurred on the thirtieth day, and a third agglutination test made two days later showed standard agglutination for *B. typhosus* in a dilution of 1 in 295.

The case is an example of how slight the immunity response may be in a mild infection.

(b) The organism responsible for the infection may be a feeble producer of agglutinins. This particularly applies to paratyphoid A infections. It is now well known that in a non-inoculated or typhoid-inoculated subject a diagnosis of paratyphoid A fever is justifiable when an agglutination for this organism is evident in a dilution as low as 1 in 10. The organism has been repeatedly isolated in this laboratory in cases which have never given higher readings. The production of so feeble an agglutinin response makes it evident that in triple inoculated subjects the change in titre of inoculation agglutinins for *B. paratyphosus* A must, in a certain proportion of cases, be so slight as to render diagnosis uncertain or impossible.

(c) The fact that many of these cases have, in addition to receiving a typhoid vaccine, also been inoculated with four doses of T. A. B. vaccine, may in some way influence agglutinin production.

It is not yet clear how far one can stimulate agglutinin formation without exhausting the mechanism of production. It has been noticed that in typhoid-inoculated subjects infected with *B. paratyphosus B* there is most usually a marked stimulation of the typhoid-inoculation agglutinins. It would appear from experience of these infections in triple inoculated subjects who had at some previous period also received a typhoid vaccine that their response is much more often slighter in extent or entirely absent.

Experience of the test in diseases other than enteric has confirmed that of Ainley Walker, who states: "The rises in enteric agglutinin titre in association with other febrile conditions very rarely amount to as much as 100 per cent., and are much more frequently either altogether absent or so small as to be practically negligible." Conradi has stated that he has demonstrated changes in titre which would be considered diagnostic in miliary tuberculosis, dysentery, pneumonia, erysipelas, and Weil's disease. It is not clear what method he adopted in carrying out his investigations, but the examination in this laboratory by Dreyer's method of many cases of similar disease has failed to show any appreciable variation of agglutinins in triple inoculated subjects.

Earlier experience of standard agglutinable cultures in non-inoculated and typhoid-inoculated subjects has confirmed the experience of Glynn and Lowe "that co-agglutination between paratyphoid A and B, or vice versa, did not occur with the Oxford emulsions." Their opinion was based on a series of cases examined during convalescence. Examinations carried out during the active stage of the disease have made it clear that co-agglutination is not a factor which should cause difficulty in diagnosis.

NOTE BY COLONEL SIR WILLIAM LEISHMAN.

Doubts have from time to time been expressed as to the diagnostic value of agglutination tests in fevers of the typhoid group contracted in men who have been inoculated with "T. A. B." vaccine. These doubts have frequently had special reference to the employment of Professor Dreyer's agglutination technique and of his standard emulsions, and to the validity of conclusions based on the behavior of the agglutinin curves obtained with them. As this method is that which has been almost exclusively used in the B. E. F. in France, it has been suggested that our views as to its value ought to be put on record. To this end I accordingly asked Captain Perry, whose experience of this method is exceptionally wide, to undertake the above description of a series of his cases, which, it is hoped, will serve to demonstrate what we believe to be its great value. This opinion, I have reason to know, is shared by almost all the pathologists in France who have had occasion to employ it on a sufficiently large scale. Professor Dreyer may perhaps be a little too optimistic as to its simplicity and as to the facility of the interpretation of the agglutinin curves, but there can, I think, be no question but that a series of tests carried out during the attack, by experienced hands, is capable of giving clear indications as to the particular germ concerned in the infection in a large majority of the cases from which a bacillus cannot be isolated.

Captain Perry's article gives, as will be seen, only a series of illustrative cases, but these have been selected in such a way that they appear to cover most of the points which have been raised.

Careful records have been kept of the agglutination readings in the enormous majority of the cases of typhoid and paratyphoid fevers which have occurred during the operations in France, fortunately a very moderate number, which it is hoped may eventually be analyzed.—(*Lancet*, April 27, 1918.)

Methuselah and Life in the Open.

V. Y. Bowditch, of Boston, makes a plea for the value of fresh air. The observation of the wholesome efficacy of fresh air goes back as far as Hippocrates and has persisted through the centuries despite much popular superstition to the contrary. Its place in the proper treatment of tuberculosis, however exaggerated at one time, is generally acknowledged. The immediate occasion of Bowditch's paper is the publication in a well-known New York periodical of an article on the "Superstition of Fresh Air," in which the author is quoted as advocating properly re-washed and re-circulated air, but resorts in the end, in case the elaborate and expensive ventilating machinery fails, to the admission of outside air through opened windows, in other words, contradicts his original position of pronouncing fresh air unnecessary. Bowditch traces the development of the fresh air treatment of tuberculosis and shows how great were the gains made by patients under the new regimen. Instances of improved physical and mental condition among school children when given sufficient fresh air are cited. A simple and efficacious ventilating system is described.—(*Am. Rev. Tub.*, 1918. Vol. 2, No. 5.)

Tuberculosis and the Wassermann Reaction.

H. J. Corper, of Chicago, publishes the results of Wassermann reactions with over 2,500 sera of tuberculosis patients. He reviews the more recent literature dealing with the Wassermann reaction among different groups of people, including the tuberculous. He himself reports that among 1,395 men and 1,399 women residents of the city of Chicago Municipal Tuberculosis Sanatorium, a definite positive Wassermann reaction was obtained in 7.2% of the men and 15.8% of the women.

The incidence of a definite positive Wassermann reaction as far as this could be determined, did not reveal any striking differences from the above figures resulting from a classification of the cases according to different ages or different nationality, or race.—(*Am. Rev. Tub.*, 1918, Vol. 2, No. 5)

Holding reports 69 cases of tuberculous adenitis treated by X-rays.

Syphilis

Visceral Findings in One Hundred Syphilitics.

Dr. Tasker Howard, of the Long Island College Hospital, Brooklyn, used for the purpose of this investigation a series of 100 cases representing an unselected serial group in order that the frequency of the various findings might be indicated.

Of the 100 patients 22 were in the hospital, where it might be supposed that the more serious cases would be found; but as most of them merely came in for salvarsan, they were not necessarily any worse than the 78 dispensary patients.

CLASSIFICATION. In order to compare the earlier with the later visceral manifestations, the cases studied consisted in 50 in the secondary stage of syphilis and 50 later cases. Such a distinction is admittedly more or less artificial, but is nevertheless of some value in this connection. Patients were classified as in the secondary stage if they presented what are generally accepted as typical secondary external lesions or if they had been infected less than a year. As a matter of fact most of them were first seen as early untreated or almost untreated cases, and most of them were seen a number of times whether or not they presented pathological findings on the first examination. Patients were classified as in the tertiary stage if they presented no secondary lesions and had been infected for more than one year. The few mixed types encountered were classified as in the secondary stage. Patients in the tertiary stage were observed a number of times, so far as was possible, if they presented evidence of visceral disease. Otherwise they were not.

Eyes. The pupils were unequal in 3 of the 50 secondary cases and in 7 of the tertiary cases. The Argyle-Robertson pupil was seen in no secondary case, but was found in 2 of the tertiary cases. They were both found to be suffering from tabes dorsalis. Exophthalmos was found in 2 early and 1 late case. All 3 were suffering from hyperthyroidism.

Thyroid Gland. Sixteen of the early and 14 of the late cases had thyroid glands which were visible and palpable. The thyroid enlargement was well marked in 2 secondary and 1 tertiary case. It is very difficult to tell when a slight enlargement of the thyroid gland is pathological.

Hyperthyroidism was definitely established in 3 early and 3 late cases. Of the 6 cases, 5 presented thyroid enlargement, 3 exophthalmos, 6 tachycardia, 6 fine tremor, 3 nervousness, 3 throbbing arteries; in 3 loss of weight was noticed. In 4 of the 6 patients the symptoms of hyperthyroidism were ameliorated by antisyphilitic treatment, the other 2 patients being lost sight of. The size of the thyroid was reduced in 2, the exophthalmos improved in 1 (with disappearance of v. Gräfe's sign), tachycardia in 4, throbbing vessels in 3, tremor in 1. Of the improved cases 2 were early and 2 were late.

Lungs. No instance of syphilis of the lungs was recognized. Among the 50 early cases there were 5 who presented more or less definite evidence of pulmonary tuberculosis involving the apices. The stage of the syphilitic disease precluded a diagnosis of syphilitic pneumonitis.

Heart. It has been shown by Warthin that the heart is a site of early predilection for invasion by the Treponema pallidum, and it is therefore not surprising there should be found considerable clinical evidence of cardiac involvement among the early as well as among the late cases. This subject has been emphasized in this country particularly by Brooks. The most extensive statistical study is that of Grassmann, who analyzed a series of 288 patients with secondary syphilis from the cardiac standpoint.

SUBJECTIVE SYMPTOMS. *Pain.* Of the secondary series there were 5 who complained of pain in the region of the heart or under the sternum. All 5 presented definite physical signs of abnormal cardiac conditions, which is in full agreement with Grassmann's observations on this point, the earlier observers having maintained that such symptoms were of purely functional origin. Cardiac pain was present in 4 of the late cases, and in these also abnormal physical signs were present.

Palpitation. Eight of the early cases suffered from palpitation of the heart; 5 of these showed corresponding physical anomalies. The 3 who failed to show them were not suffering from the symptom at the time when they were examined, but had previously complained of it, and had been under treatment for some months since that time. One third-stage patient who was suffering from hyperthyroidism complained of palpitation.

Dyspnea. Three early cases suffered from abnormal dyspnea on exertion. It was not a very marked feature in any of the cases in this series.

PHYSICAL SIGNS. *Arrhythmia.* The arrhythmia noted so frequently by most of the older writers in early syphilis was undoubtedly of the nervous type—the sinus arrhythmia. Of course, this bears no relation to cardiac integrity and is merely evidence of a hypersensitive nervous system. In this connection it is of some interest. Fifteen of the 50 early cases studied presented well-marked sinus arrhythmia as contrasted with the 2 of the 50 later cases who showed it. The inference is clear.

Extrasystoles, denoting a definite cardiac affection, were found but three times in the secondary series and once in the tertiary.

Cardiac Enlargement. In studying the outlines of the heart, percussion findings were never accepted unless corroborated by palpation. A heart was not considered enlarged unless the apical impulse was definitely displaced. Enlarged hearts were found in 18 of the early cases and in 11 of the late cases.

Mitral Regurgitation. Mitral regurgitation, the presence of which could be recognized by its three cardinal symptoms, viz., apical displacement, typical murmur, and accentuated pulmonic second sound, was found in 8 early cases. Of the 8, 4 gave evidence of conditions other than syphilis which might account for it; 1 tertiary case had a leaking mitral.

A systolic murmur at the apex, without other signs of regurgitation, was found in 11 early and 5 late cases.

A systolic murmur at the base was found in 11 early and 6 late cases. Aside from aortitis this murmur has about the same significance as the last mentioned.

A reduplication of the second sound, most typically discernible at the apex, was found in 7 of the early cases and in n late ones. This sign is usually associated with other evidences of myocardial involvement and seems to be rather characteristic of the condition.

Throbbing carotids were seen in 6 secondary and in no tertiary cases. The heart was described as overacting in 5 early and 1 late case.

Aortic regurgitation was conspicuous by its absence.

Aortitis, as signified by a rough systolic murmur transmitted from the aortic area to the neck and by a ringing aortic second, was found in 1 early and 4 late cases.

Arteriosclerosis occurred in 4 early and 10 late cases. The early cases averaged twenty-seven years of age and the late cases thirty-eight years. It is impossible to hold syphilis responsible for all of these cases, but the figures are strikingly suggestive.

Blood-pressure readings were made in 20 early and 20 late cases. The early cases averaged 131 systolic and 84 diastolic, while the late cases averaged 137 systolic and 87 diastolic.

Summary of Heart Findings. Of the 50 syphilitic patients in the secondary stage, 24 (48 per cent.) gave definite evidence of cardiac pathology, not always of syphilitic origin, as has been seen.

EFFECT OF TREATMENT. Of the 14 cases of secondary syphilis with definite cardiac involvement, which were watched long enough to determine the effect of specific treatment, 11 showed improvement and 3 did not. The improvement usually amounted to a disappearance of all signs and symptoms. Possibly the 3 intractable cases would have shown improvement if watched over longer periods, although, of course, there are cases which fail to respond to all treatment.

The patients with tertiary syphilis presenting evidence of cardiac involvement, who were discovered in this investigation, for the most part presented no cardiac symptoms. The commoner physical signs, such as hypertrophy due to arteriosclerosis, would naturally not be affected by treatment, and these were not followed. One patient of the tertiary group with cardiac insufficiency had found so much relief from previous courses of antisyphilitic treatment that he had returned to the hospital a number of times, applying to the syphilitic department for treatment. The patient with aneurysm of the aorta died of bronchopneumonia shortly after admission. Only one of the patients with aortitis complained of symptoms, in this case pain, which was much relieved by salvarsan. Of the 4 patients in the tertiary stage who complained of cardiac pain, 2 were relieved by treatment and 2 were not.

Salvarsan Reaction. A peculiar cardiac reaction was twice noticed after the administration of salvarsan in early cases. This consisted in an augmentation of the signs of cardiac involvement or their appearance, such as might represent a Herxheimer reaction, except for the fact that the disturbance lasted for from two to three weeks. There was evident dilatation in both cases. A repetition of the dose was not followed by a similar reaction. This phenomena has also been noted in patients not included in this series. If the dilatation were an arsenic reaction one would expect that the individual would

show the same reaction to later doses of the drug. It seems more likely that it is a true Herxheimer reaction and that the heart takes longer to recover its normal condition than do other tissues. I believe it is important that the heart should be carefully watched after the administration of salvarsan, and any signs of dilatation of the heart should be considered indications for absolute rest as long as such signs persist.

Kidneys. The kidneys were not investigated as thoroughly as they might have been. Of the secondary cases, urinalyses were made in 15 instances and albumin found in 2. One of these, an early case, was admitted to the hospital with an acute nephritis and typical secondary symptoms. He had received four intramuscular injections of mercury. The relation of the syphilis to the nephritis is problematical. Of the later cases the urine was studied in 8 and was negative in all.

Suprarenals. One case of Addison's disease of syphilitic origin was practically cured by antiluetic treatment.

Digestive Disturbances. Digestive disturbances were of rare occurrence. But one of the secondary cases complained of any indigestion which had appeared since the infection, and that amounted merely to a tendency to constipation and flatulency. Of the tertiary cases 2 complained of slight indigestion and 1 of symptoms of gastric ulcer. This patient left before treatment could be properly instituted. Among the tertiary cases there were 3 with serious stomach symptoms, and these all proved to be the gastric crises of tabes.

The Liver. In spite of the fact that the liver comes after the testicle and brain in frequency of involvement, the clinical manifestations of hepatic involvement are by no means as frequent as are those of other organs. This Brooks ascribes to the large margin of safety which the liver possesses. Brooks has demonstrated obstruction of the biliary radicles through pressure from adjacent syphilitic periarteritis. In the present series 1 of the 50 secondary cases presented slight jaundice with an enlarged and tender liver, and in 2 other patients the liver was palpable. Of the tertiary cases the liver in 1 was 2 inches below the costal margin when first seen and had disappeared after two months' treatment. In 2 others of this series the liver was palpable, 1 having a ptosed liver and 1 cardiac disease with broken compensation.

Spleen. In only 2 cases of secondary syphilis was there demonstrable enlargement of the spleen, and 1 of these gave a history of malaria. These findings are radically different from those of Wile and Elliott, who noted enlarged spleens in 36 per cent. of their cases. Other authors whom they quote give figures varying from about 2 per cent. to 10 per cent. The writer has found enlarged spleens in several cases of secondary syphilis not included in this series, but in nothing like the proportion noted by Wile and Elliott. In the tertiary group an enlarged spleen was found in one patient who gave a history of malaria.

Nervous System. In the early cases some degree of mental perturbation and nervous hypersusceptibility was, of course, the rule. This was demonstrated physically by the frequency of nervous cardiac arrhythmias (30 per cent.). No case of definite syphilitic involvement of the nervous system was found.

In the tertiary group there was 1 case of transverse myelitis which occurred one year after infection (hospital case) and 3 cases of tabes, beside a palatal palsy of peripheral origin and a hemiplegia in a man, aged thirty-one years, coming on three years after infection.

Joints. In the present series 1 patient in the secondary group gave a history of pain and swelling of the fingers and knees at the same time that he was suffering from sore throat and mucous patches. All of the symptoms had disappeared during the four weeks of antisyphilitic treatment he had received at the dispensary before he was seen by the writer.

CONCLUSIONS. Visceral syphilis is at least as common and much more serious than cutaneous syphilis, which has in times past been given the greater amount of attention. The manifestations of visceral syphilis are detectable in the early stages of the disease in a large proportion of cases. Such manifestations are about as readily controlled by proper treatment as are the visible signs of the disease. It is important, however, in view of the extreme seriousness of the later stages of virceral syphilis, that the treatment be pushed energetically from the start in order to eradicate the disease while it is possible and before irremediable damage has been done. Furthermore, it is important that every patient with syphilis be carefully watched for signs of such visceral involvement as should indicate treatment beside the ordinary antisyphilitic measures. For example, a dilatating heart in early syphilis indicates rest just as clearly as though it were due to rheumatic carditis, and the neglect of this precaution may leave the patient with a weak heart even though he be lucky enough to be cured of his syphilis.

Cardiac dilatation of sevedal weeks' duration sometimes occurs after the administration of salvarsan.

To sum up, our medical wards will be deprived of their present generous supply of syphilitic wrecks only when every syphilitic patient is treated early, thoroughly, persistently, and with painstaking consideration of his individual requirements. —(*Am. Jour. Med. Sc.*, vol. cliv., p. 64.)

Treatment of Syphilis.

With the introduction of the dispensary system for the treatment of venereal disease in Germany has come a growing demand for uniformity and the use of the procedure which gives the best results. In the pre-salvarsan period the treatment of syphilis with mercury had become more or less standardized. This cannot yet be said of the present day combined treatment with salvarsan and mercury, which gives, apparently, widely different results according to the systems of dosage employed. Thus Hübner (*Muench. med. Woch.*, July 10, 1917), in a survey of the experience gained in the Elberfeld dispensaries and hospitals, concludes that, with the combined treatment, as practised by himself, one course was totally inadequate, and that only by its repetition at certain intervals could permanent results be secured. He re-examined 243 cases of syphilis treated in 1915 and 1916 in the Elberfeld hospital, and found that of the patients who had neglected to seek medical aid after leaving hospital only 10 per cent. were free from symptoms and gave a negative Wassermann reaction. The percentage rose to 33 among those who had undergone at least one supplementary course of treatment after leaving hospital, and was as high as 66 among the patients who had had the benefit of several supplementary courses.

Professor Scholtz of Königsberg has made an emphatic protest against the supplementary treatment as a matter of routine. He regards the above results as exceptionally bad and indicative of faulty dosage, and claims that by his method of combining these drugs he has effected 100 per cent. of cures among his private patients treated for primary syphilis. The results were almost as good among his hospital patients. Among patients treated for secondary syphilis within two years of infection a single course of salvarsan and mercury effected a cure in at least 85 per cent. Scholtz regards as cured patients who for at least two years have shown no clinical or serological sign of syphilis on half-yearly or quarterly examination. Only when his patients showed signs of relapse after the first course did he prescribe a supplementary course eight to ten weeks after the completion of the first; it was found that half of these relapsing patients required a third course. He states that he never experiencd any serious accident with old salvarsan, although he and his assistants have given over 30,000 injections. Several cases of fatal hemorrhagic encephalitis followed the administration of neo-salvarsan, of which more than 20,000 injections had been given.—(*Brit. Med. Jour.*, Feb. 9, 1918.)

The Wassermann and Bruck Reactions.

H. J. Corper and L. Fiala, of Chicago, report on the serochemical reaction of Bruck, which they tried on 228 sera in a tuberculosis sanatorium. They found this reaction for syphilis unreliable as a test to supplement the Wassermann reaction in the tuberculosis sanatorium. Of 14 Wassermann reacting sera six gave a negative serochemical reaction. Of 213 negative Wassermann reacting sera, 113 gave a positive Bruck test. The percentage of positives was greater among the moderately advanced and far advanced cases of tuberculosis than among other classes of tuberculosis cases and of non-tuberculous cases. The Bruck technique was followed. A review of the literature is included in the paper.—(*Am. Rev. Tub.*, 1918, Vol. 2, No. 5.)

Extensive dissection with excision of tuberculous cervical glands is now rarely, if ever, justified.—Pfender.

It is safe to be in the presence of anyone suffering from tuberculosis when said patient uses the ordinary precautions to prevent the spread of infection.—Slater.

The employees of the sanatoria throughout the country show decidedly less liability to tuberculosis than if they worked at any other employment. Physicians who are constantly caring for the tuberculous and laryngologists who are frequently exposed, show a comparatively low mortality from the disease.—Slater.

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The Dangerous Hysteria of the Mob.

The mob spirit which has shown itself most markedly in Ohio, Minnesota, North Dakota, Oklahoma and Washington, and having as its object the persecution of German aliens and German-Americans, is properly characterized by the New York *Sun* as warped patriotism. The New York *Evening Post* points out that more or less of this spirit afflicts the whole country.

The serious character of this hysteria is established by the threats against the lives of members of the Committee on Public Information, sent out by our Government to discuss the war and preach loyalty to the people. The illegal assumption of power by crowds has in other words led to the terrorizing of Federal agents as well as of persons alleged to be disloyal.

It seems to us that such excesses are inevitable after the passions of the mob have been systematically aroused by a certain section of the press and by certain types of speakers who have been much in evidence. Accredited officials have also advised citizens to pursue a course of action toward their neighbors calculated solely to arouse universal suspicion and to lead to malicious acts.

Lawlessness under the guise of patriotism is about the most dangerous state of affairs that could confront the nation, for it constitutes a terrific menace against the stability of the Government itself. The hysteria aroused in fools by fools is the very stuff of which revolt against fundamental law and order is made. Those so unworthy as to succumb to this hysteria, and those idiotic and criminal enough to arouse and foster it, are the very people who would turn viciously against the authorities at a time of crisis or peril.

Undoubtedly the element of feeble-mindedness must be taken into consideration in this matter, in so far as regards the mob itself. Those who take advantage of the mob are potential traitors, for their work leads logically to red revolution. Yet for some curious psychological reason all our fear is of the "radical," who usually represents a constructive force.

This phase of the war's morbid psychology must be abated. In abating it we shall be safeguarding the State.

The Lynching Mania a Form of Sadistic Group Epilepsy.

Jelliffe has pointed out that the epileptic seizure reveals itself as a substitute for deeply concealed impulses of an infantile and asocial nature. Stekel has noted a strong criminal tendency in many of his cases, brought out in the psychoanalyses. "Strongly repressed from consciousness it had therefore created the disturbance of the unconscious which resulted in seizures. The analyses brought to light murder instincts or incest wishes for which compulsive thoughts and actions had to atone in consciousness; or a strong sadistic masochistic nature was revealed which also defended itself in part by a symptomatic manifestation. When the entire complex, however, was strong enough to break through, an epileptic seizure was the result."

We are familiar with the fact that the faulty energy discharge which we term the epileptic attack does not necessarily take the classical convulsive form. No less real than, and perhaps as frequent as, the familiar sensorimotor seizure, are states of conflict with imperfect energy distribution and discharge leading to radical modifications in the victim's mode of acting. "For," says Jelliffe, "with our knowledge of the unconscious and the harboring there of infantile wish impulses and immature tendencies seeking expression in a world of reality to which they do not belong, we cannot be surprised to find in the field of our search not only a strong infantile wish tendency fighting for fulfilment, but a complex entanglement of such wishes in the case of the epileptic."

"We all have traces," says MacCurdy, "of the epileptic reaction when we give way to temper, choose the easier path, or allow our egotism to sway our judgment." Consider how a victim of Flournoy's "emotional epilepsy" would be likely to react to specific social excitements, such as those attending happenings associated with lynchings.

Deep in the subconscious minds of the mobs that have indulged in lynchings have been criminal wish impulses and sadistic yearnings not possible of expression until the appearance of a scapegoat, to wit, an offender against the law with a black skin. Perhaps to the sadist a peculiar gratification derives from the contemplation of gore upon a black background.

In communities distinguished for feeble-mindedness and a high incidence in the number of psychic epileptics we should look for group reactions of sadistic character, bearing in mind that both feeble-mindedness and the epileptic reaction may be conceived as expressing themselves through group affinities as well as through individual pathways.

A given series of interactions between a psychic epileptic and his environment, leading to sadistic results, may easily be conceived as activating a group. Assuming then a horde of feeble-minded cohorts and the inevitable reaction may be confidently predicated. But in this case we have all the gruesome facts—have had

them over and over again—and what could better account for them than the dynamic psychopathology which we have postulated?

And it is not the German army that we are writing about, but the citizens of certain American communities who, in the language of the President, have adopted the standards of the enemies of their country, whom they affect to despise. It is not necessary for Germany's gifted liars to invent calumnies, says the President, so long as we have with us these well known degenerates.

Largely responsible for the acts of such criminals as those who recently lynched Mary Turner, a pregnant woman, has been the suggestion involved in the gruesome descriptions of atrocities in Europe. One can readily see the meaning of recent "progress" in the art of lynching. Mary Turner, according to the special report made to Governor Dorsey, was tied by the ankles and hung head downward, after which her clothing was soaked with gasoline and then set on fire. The old lynchings were never like this. There is a real danger in detailing to the mob the atrocities that have disgraced the European war zone, for actual use is made of the data supplied. It is greatly to be regretted that in exciting normal passions the worst instincts of degenerates are also likely to be aroused.

In Lieu of Prohibition.

The proposal to impose a graduated Federal tax on beverages seems to us well calculated to reform the liquor traffic without resorting to sumptuary prohibition laws, though we realize the difficulty of enacting rational legislation while the fanaticism of childish and immature minds is rampant.

It is proposed to institute a tax of four cents a gallon for two per cent. alcohol, one dollar a gallon for ten per cent. alcohol, four dollars a gallon for twenty per cent alcohol, and so forth. Proof whiskey, containing fifty per cent. of alcohol, would pay a tax of twenty-five dollars a gallon.

A very appealing feature of the proposal in question is the inclusion of alcoholic nostrums under the operation of the tax.

With such a tax in operation the Government would receive a large amount of taxes which it would lose under prohibition laws.

While, as we have said, it would be difficult to enact rational legislation under present conditions, it is happily possible just now to discuss the alcohol question sanely without incurring the suspicion of being in the pay of the liquor interests, because the President himself, the Food Administrator, the Shipping Board and General Pershing have all done so. Their good faith and desire to win the war cannot be impugned even by fanatics, and their insistence upon reasonable policies in the matter of alcohol has put an end to matter-of-course denunciations of all who speak in the proper spirit.

A New Idea in Housing Hygiene.

We like very much the idea of the *Journal de Médecine de Bordeaux* regarding the collection of data sufficient to establish a bill of health (or lack of health) for each residence in a city. Various municipal departments have accumulations of data in regard to practically all dwellings, and the idea of the *Journal* is to effect a correlation and classification of records that will supply the health record of each dwelling involved. In this way any one wishing to know the health history of a given dwelling could find it on consulting the public records. The public should then be educated so as to create the habit of demanding the health history of a dwelling before a purchase or before renting.

If this idea of the *Journal* could be put into practice we would expect to see real estate advertised in a different manner. Fancy a notice naming among the various advantages of certain property "no infectious disease since erection in 1887." Certainly sale or rental would be furthered where this sort of thing could be said. On the other hand let us imagine a property advertised concerning which there is ominous silence as to the health record, search disclosing a very bad sanitary history. In this case one would purchase or rent with his eyes wide open.

It is safe to say that real estate interests would not be favorably inclined toward the lifting of present secrecy in their domain.

A great light would be thrown upon the matter of "cancer houses" through the application of the *Journal's* idea.

Another valuable feature of the scheme would be the knowledge gained of relative health conditions in different districts of a municipality, which conditions could be graphically plotted on maps which would be of great aid to those engaged in the tasks of social hygiene.

A Possible Factor in the Genesis of Shell Shock.

Howard, in a recent contribution (*New York Medical Journal*, March 2, 1918), insists that those who would preach the necessity or expediency of driving out all sexual impulses in our soldiers are very stupid, since sexuality and pugnacity are interchangeable terms. "A man devoid of sexual impulses is a weakling. A sexless soldier is a paradox. To state that a man can be a good fighter yet free from impelling sexual desire is pure bathos." Howard also points out that the ancients ordered these matters better than the moderns, in that their priests and officers did not preach nor demand continence or fatuously attempt to believe that masses of young and virile men could have fighting qualifications and at the same time be free from sexuality.

Moses, it appears, did not content himself with killing twenty-three thousand syphilitic soldiers in his army who had been infected by the women of the Moabites, nor with cleansing, washing, quarantine and the threat of the death penalty for any soldier accepting the favors of the women of the enemy, but he also decreed that his soldiers take unto themselves wives.

Doubtless it is inexpedient for the soldiers of our modern armies to take unto themselves wives. So let us assume that Howard is right, but that sexual suppression and repression are the order of the day. The thought that obtrudes itself in this connection is this: may there not be a possible connection between the morbid sexual lives of such soldiers and the phenomena known as shell shock?

Why Antiseptics?

R. Tanner Hewlett, of London, thinks that in the treatment of war wounds good surgery is the essential for success. By this he means thorough cleansing and complete removal of all foreign bodies and material, and free drainage. In a recent paper in *American Medicine* he doubts whether hypochlorite solutions are better than some other antiseptics and suggests trial of these by the Carrel-Dakin method, the results to be compared with those from Dakin's solution.

Why not physiological salt solution?

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Alcohol and Civilization.

Alcoholism and civilization have always sustained a curious relationship. Close students of the history of human society point out many facts which ought to suggest a great deal to the unprejudiced mind (though we greatly fear that the unprejudiced mind is a very abstract postulate). Thus, for example, civilization has seemed to progress only as the free imbibition of alcohol has been possible. The Book of Genesis describes mankind as engulphed in wickedness before the discovery of alcohol. When Noah "began to be an husbandman and planted a vineyard" civilization improved at once.

Civilization first arose in the northern hemisphere, and students point out the apparent association of alcoholism with the phenomenon, for in the southern hemisphere civilization lagged and the use of alcohol was unknown.

The Latin races were certainly drunken in classical times, while their intellectual and artistic productivity was simply marvellous. Today they are comparatively temperate and surely less creative. The same thing holds good in the case of the Greeks.

In the great days of the Hebrew race wine-drinking was much indulged in. Then was produced that literature under whose spell the world has since lived enraptured.

When the Moslems drank wine the Arabian Nights were conceived and mathematics carried to an excelling point. After the fifteenth century they drank coffee and found it necessary to employ the liquor-using Copts to keep their accounts!

The rise of the Dutch Republic was coincident with the excessive use of gin. Then religious and political freedom was won, the arts flourished wonderfully, and enterprise assumed tremendous force.

The abstemious people of Gaul were unable to resist the alcoholized Romans. Gaul was "bone dry" and uncivilized. But in the tenth century civilization in the Rhine country rapidly rose coincidently with the adoption of alcohol.

The brilliantly intellectual Elizabethan era in England coincided with a veritable epidemic of alcoholism. The vast achievements of Merrie England proceeded hand in hand with a colossal degree of drunkenness.

When the Scotch adopted the use of whiskey in the eighteenth century there followed the rise of the Caledonian peasantry. In the arts and all forms of enterprise there was a great step forward.

The great chapters in American history—the winning of independence and the abolition of slavery—were written at a time of universal alcoholism.

What is the explanation of the foregoing curious and undeniable facts? Progress *in the past* depended upon alcohol because it destroys the weak. To those uninjured by alcohol successful achievement was easily possible. This does not mean that he who abstained had the world at his mercy. It means that a *minority* in times past actually derived peculiar effects from alcohol of a character facilitating intellectual processes and making for constructive achievement, while to the vast majority it was a devastating scourge.

Past progress has depended upon alcohol because it has destroyed a class of people who deserved destruction. To such people it has been freely accessible, and civilization has had in it a powerful and selective weapon. Moreover, past progress has depended upon alcohol for the reason that special and desirable reactions have been induced by it in a few individuals. As examples we may name Horace, Anacreon, Catullus, Ovid, Æschylus, Chaucer, Shakespeare, Marlowe, Ben Jonson, Cervantes, Swift, Addison, Steele, Herrick, Omar Khayyám, Burns, Lamb, Byron, Moore, Rossetti, Coleridge, De Quincey, Lionel Johnson, Goethe, Handel, Frans Hals, Turner, Swinburne and Whitman. Hazlitt declined in intellectual power and in health when he abjured alcohol.

Thus there is no record in history of a people exalted by abstinence. The races that have triumphed have been the races that have consumed alcohol freely. Alcohol has discovered alike those who have been unable to resist it and those whom it has made demigods. Upon such foundations racial improvement has been bound to go forward continuously.

But civilization today must find other weapons against the factors that make for decadence. We cannot feed alcohol intensively to those who are harmed by it, with the idea of hastening their destruction, but we can at least use it as an index of superiority and inferiority. *It is our business to discover those who experience desirable reactions and to see that they use alcohol.* Civilization should make *conscious* use of this mighty factor in human life, and no longer let the alcohol question remain a political and economic shuttlecock.

Haphazardly the alcohol *test* has operated through the ages. Let us now bring it into the social laboratory for purposes of differential diagnosis and clinical use in a new sense. Let us insist that subjects like Mr. Bryan be observed under the influence of alcohol. It is entirely possible that through it more than the mere redemption of such individuals might be achieved—alcohol might make even of such a man as Mr. Bryan a poet, or a painter, or a President!

War Medicine and Surgery

Gunshot Injuries of the Elbow-Joint Treatment by Early Incision.

Captain W. Moir Shepherd, R. A. M. C., says the ultimate results of injuries to the elbow-joint caused by gunshot wounds cannot be regarded as satisfactory, as in the majority of cases there is complete ankylosis, and not always in the most favorable position. Even if the wound remains aseptic, bony outgrowth will in the long run inhibit movement to a considerable degree. It is, however, the regrettable experience of most surgeons that comparatively few gunshot injuries remain aseptic, and this is particularly true in the case of joints.

When the bones are badly comminuted, especially the lower end of the humerus, and with it perhaps also the olecranon process of the ulna, results are deplorable—sepsis spreads in the surrounding parts, which become oedematous and swollen, the synovial membrane is infected, drainage is difficult and unsatisfactory, and the patient rapidly shows signs of septic absorption. Whatever method to combat infection be undertaken the results are the same—the bone goes on necrosing, and accurate apposition of fragments is out of the question, a long and tedious illness results, and one not devoid of risk to the patient—risk of both life and limb.

Primary excision of the elbow for tuberculous disease, fracture dislocation, and the like yields good results, and it would therefore appear feasible that equally good results might be obtained by early excision of wounded joints. The degree of sepsis in the surrounding tissues forms no contraindication to immediate excision—in fact, experience has shown that the free drainage immediately provided by the excision of the joint is coincident with a rapid fall in pulse and temperature, and the patient makes strides towards recovery, and is soon able to be up and about.

The question arises, How much bone is to be removed to secure a satisfactory new joint? But this, of course, will largely depend upon the nature of the primary injury.

A large number of cases of gunshot wounds of the elbow-joint with little or no damage to heads of radius or ulna have passed through my hands at a base hospital. In an early series of cases the classical excision of the joint was performed, removing the humerus just above the level of the epicondyle, the whole of the head of the radius and ulna at the same level, but, as was to be expected, movement was long in returning, and the forearm muscles had to be re-educated. A more satisfactory functional result can be obtained by removing less bone and interfering less with muscle attachments.

In a late series the lower end of the humerus was removed above the level of the epicondyles and rounded well off, preserving the radius and ulna intact and not interfering with the attachment of triceps to ulna if the latter was not already damaged. The incision employed was the angled incision of Kocher, beginning at the lateral epicondylar ridge two or three fingerbreadths above the joint level, pressing vertically down to the head of the radius and thence along the lateral border of the anconeus to the dorsal border of ulna about three inches below the tip of the olecranon, and finally curving medially over the ulna. In certain cases the incision had to be modified to suit the wound existing, but as far as possible the angled incision was employed to avoid damage to important structures.

The treatment naturally varied, depending upon the degree of sepsis present. If severe the wound was left widely open and treated with eusol gauze or after the method of Carrel-Dakin, the arm being fixed to a splint at right angles until sepsis subsided and the surrounding parts returned to normal. In milder cases the wound was partially closed with sutures, while the last few cases which came to the base early were excised, bipped, and closed after the method of Rutherford Morison, with excellent results.

The splint is left off as soon as the wound has healed sufficiently and the arm supported with a sling, the patient being encouraged from the first to use his wrist and fingers. At night the arm is extended on a pillow or fixed to a straight or widely-angled splint, if desirable.

The results, even in very septic cases, were surprising, the wounds cleared up rapidly, and the patient was able in all cases in the series to be out of bed at an early date, and movement was encouraged by the end of the fifteenth to eighteenth day. One patient at the end of a month could flex and extend his elbow as well as pronate and supinate his forearm and only a small healing sinus remained. The earlier the excision is performed the more certain is the patient to have a good and serviceable arm with free movement.

The conclusions arrived at from observation of fourteen cases are as follows:

1. Excision of the elbow-joint in gunshot wounds offers the patient the best chance of combating the infection and of a rapid recovery with a movable joint.

2. If excision can be performed without the removal of the heads of radius and ulna, the results are better and more quickly attained.

3. Where possible the triceps insertion should always be preserved.

4. The earlier the excision is performed the shorter is the illness and more perfect the result.—(*Brit. Med. Jour.*, Feb. 2, 1918.)

Functional Disorder of the Heart in Soldiers.

At a recent meeting of the Ulster Medical Society, Dr. J. E. MacIlwaine gave his experience at an overseas base of the clinical examination of over 3,000 cardiac patients, roughly two-thirds of whom he found to be suffering from functional disorder. Physical examination failed to detect the presence of organic disease, while a routine examination of the nervous system showed lack of mental control, increase of deep reflexes, and other evidences of a state of irritable weakness of the psychic and psycho-motor systems. In these cases Dr. MacIlwaine assumes a similar condition of irritable weakness in the involuntary nervous system which betrays itself by the irritable heart syndrome in response to effort or emotion. A fuller study of the involuntary nervous system, as elaborated by Gaskell, would, in Dr. MacIlwaine's opinion, illumine many of the symptoms of so-called neuroses. He summaries thus the automatic functions of this system:—

1. It acts as the bodily thermo-regulator, keeping it at constant temperature by proper blood distribution and sweat secretion in spite of varying internal and external conditions. Strain is put upon this function by effort and privation.

2. It regulates the alimentary mechanism.

3. It adjusts the blood-supply so that its distribution is only momentarily affected by gravity and sudden postural change.

4. It determines the involuntary visceral effects of emotion.

5. It controls the mechanism of the organs of reproduction.

It is in this involuntary neuro-muscular mechanism that a condition of irritable weakness is most evident in functional disorders of the heart. The two basal factors in the etiology of the condition are emotion and intoxication. Emotion the soldier is trained by discipline to control. The effect of bacterial toxaemia is well recognized in the section of post-infective neurasthenia, and the rheumatic toxins, with their selective action upon the nerve dendrites, are of special importance.

Normally the cardio-vascular tone and the circulatory efficiency are maintained by a balanced nervous action in the involuntary nervous system, just as tone and co-ordination of movement in the voluntary muscular mechanism depend upon the proper integration of nervous impulses to opposing muscles. Sympathetic overaction expresses itself in tachycardia and sweating, vagal preponderance in faintness. In cardiac neurasthenics sympathetic overaction is in the ascendant, and often coincides with evidence of vagal insufficiency shown by an atonic state of the stomach and intestines.

Dr. MacIlwaine concludes that the essence of the cardiac disorder is an increased reaction of the individual nervous system to an intoxication, the results of which would be subliminal in respect of signs and symptoms in a normal person.—(*Lancet*, Feb. 16, 1918.)

The Involvement of the External and Internal Popliteal Nerves in Lesions of the Sciatic Nerve.

T. E. Hammond observes that during the South African war the external popliteal nerve was stated to be involved nine times as frequently as the internal popliteal nerve. In injuries of the sciatic nerve during the present war the proportion is stated to be three to one. Hoffman believed it to be due to the smaller blood supply of the external popliteal; but, on the other hand, this is the smaller nerve. The fact that the internal lies more in line with the femoral vessels and that the external is the more superficial cannot account for the disproportion, as the nerves lie side by side, and bullets pass in all directions.

The external popliteal, corresponding to the musculo-spiral nerve in the arm, supplies muscles which act against gravity. The slightest lesion of the nerve is followed by paresis of the extensor muscles, which is always evident by foot-drop and steppage gait. Great clinical experience is not necessary to make a diagnosis, and, owing to the continual overstretching of the muscles, no improvement follows until proper treatment has been applied.

The internal popliteal, corresponding to the ulnar and median nerves in the arm, supplies the plantar flexors of the ankle, the small muscles of the foot, and sensory fibres to the skin of the heel and sole. The action of these muscles is aided by gravity. In complete division but slight deformity is usually present, and apart from inelasticity in the gait, slight inconvenience is caused; this is shown by the useful movement obtained in complete division of the sciatic after correction of the drop-foot by a suitable boot. In incomplete division slight pes cavus may be present with paresis of the flexor muscles and anesthesia, trophic changes being usually absent. Voluntary contraction of the flexors produces plantar flexion of the ankle and toes. The paresis is often difficult to observe, unless a careful examination is made, full plantar flexion of the ankle and toes being possible by the action of gravity alone, if the extensors be relaxed. It should be sought for with the patient lying prone and the knee flexed to a right angle, plantar flexion now taking place against the action of gravity. The skin of the sole and heel is not very sensitive, and to excite epicritic sensation in the normal sole slight pressure of the cotton-wool may be necessary. The internal saphenous and the popliteal position of the external saphenous encroach on the sole of the foot and many of the ligaments are supplied by the external popliteal, and as in an incomplete lesion deep pressure sensation is often retained, the greatest care in applying the cotton-wool test is necessary.

In the case of an incomplete lesion of the internal popliteal associated with a complete or incomplete lesion of the external popliteal, the flexor muscles contract with the aid of gravity, and, as they have not to overcome the normal tone of the extensors, their action may appear to be as great as usual.

Careful examination by a competent observer is necessary for the diagnosis of some of these incomplete lesions. The foot from the time of the injury is placed by the action of gravity in the position of plantar flexion, this relaxes the affected muscles and helps their recovery, even if no treatment be applied.

In lesions of the sciatic nerve admitted to Alder Hey from other hospitals, the external popliteal was affected three times as often as the internal. The greater number of the latter were admited for the painful neuritic condition, or for the combined lesion with foot-drop.

One hundred cases, admitted direct from France, in which the wound was in the upper two-thirds of the thigh, and there was a possibility of sciatic involvement, were carefully examined by me. The sciatic nerve was involved in 22.

In 4 the external and internal portions were completely involved.

In 3 the external was completely and the internal incompletely involved.

In 2 the internal was completely and the external incompletely involved.

In 9 the external and internal were both incompletely involved.

In 3 the external was alone involved.

In 1 the internal was alone involved.

The external popliteal was thus involved in 21 and the internal in 19 cases. In some o fthe latter diagnosis was only possible after a most careful examination, and in most cases the associated foot-drop alone caused inconvenience; except in the painful neuritic forms, there was a marked tendency for improvement to occur in the incomplete lesions. Incomplete lesions of the external popliteal did not show the same tendency to recover, and with the slightest paresis diagnosis was always evident owing to the inability to maintain dorsiflexion.

It may therefore be stated that for diagnosis of incomplete lesions of the internal popliteal nerve a most careful examination is necessary, especially if a lesion of the external popliteal be present. In addition, the muscles are naturally placed in the position of relaxation, and recovery follows in many cases without a diagnosis or any special treatment. Incomplete lesions of the external popliteal are always associated with foot-drop, and, as the affected muscles are overstretched, no improvement follows until a diagnosis has been made and appropriate treatment instituted.

Hammond thinks that the majority of lesions of the internal popliteal are never diagnosed, while lesions of the external popliteal are scarcely ever missed. During the examination of certain cases which could not pass the necessary tests at a command dépôt thirty-six nerve lesions were discovered by me, in spite of the fact that all cases should have been fit for general service four months after admission; thirty-five were previously undiagnosed lesions of the median and ulnar nerves, while only one was a lesion of the musculo-spiral, and this had been operated upon. Lesions of the median and ulnar nerves do not usually give rise to a deformity of a degree comparable to that present in musculo-spiral lesions. It therefore seems that even in the arm nerve lesions are more likely to be missed by inexperienced observers if marked deformity be absent; this must apply all the more to the leg, where special function of the toes is not required.—(*Brit. M. J.*, Ap. 6, 1918.)

The Anaerobic Bacteria of War Wounds.

Although there was a large pre-war literature on anærobic bacteria, the subject was never really dealt with according to the more modern exact bacteriological technique; and as a result of the difficulty of obtaining pure cultures of these organisms any particular anærobe cannot be identified with the same degree of certainty as in the case of an ærobe. The frequency of gas gangrene during the war has greatly increased the output of this work, and Major Carroll G. Bull, U. S. Army, has already produced an antitoxic serum against infections with *Bacillus welchii*.

In a recent publication of the Medical Research Committee Dr. James McIntosh has published the results of an elaborate investigation of the anærobic organisms and cleared away some of the obstacles to more accurate knowledge on the subject. The employment of a new apparatus for the isolation and cultivation of anærobic organisms, designed in conjunction with Dr. Paul Fildes, with whom the earlier part of the work was carried out, enabled pure cultures to be obtained. Two hundred individual strains have been isolated and examined. With the exception of the *B. welchii* group, for which agglutinins are not produced, the identification of a strain can be much simplified by the use of agglutinating serums prepared from rabbits. Although agglutinins could not be demonstrated in serums prepared against members of the *B. welchii* group, the presence of specific antibodies in these serums was shown by means of the complement fixation test.

Out of nineteen different types of anærobes identified by Dr. McIntosh, all except *B. chauvoei* and *B. botulinus* have been obtained from war wounds. A detailed description of these nineteen types is given. Only two of these anærobes were found to be truly toxogenic—a result opposed to Bull's and Pritchett's description of an exotoxin for *B. welchii*.

The anærobic flora of wounds is shown to be much more complex than some of the earlier publications during the war indicated, and in the majority of gangrenous wounds, both acute and chronic, several anærobes can be isolated; of the pathogenic varieties the most frequently isolated are the *B. welchii* group, and next in order of frequency Pasteur's *"Vibrion septique,"* which must now be regarded as the same organism as Koch's bacillus, afterwards described under the name of malignant oedema; while of the non-pathogenic varieties certain forms of *B. welchii* and *B. sporogenes*, which has often been mistaken for the bacillus of malignant oedema, are almost constant. Gas gangrene may therefore be regarded as a clinical symptom-group which can be produced by one or more of a series of anærobic bacteria. A further memoir on the important practical questions associated with the pathology of gas gangrene is now in preparation.—(*Brit. Med. Jour.*, Feb. 2, 1918.)

An Essential Principle in the Treatment of Gas Gangrene.

Colonel H. M. W. Gray of the British Army calls attention to the fact that the causative bacilli of gas gangrene will not develop in tissues which are provided with a vigorous circulation of healthy blood. They thrive best when the circulation is entirely stopped—for example, in a person dead of gas gangrene or in a limb of a living persons where the main vesesls have been severed. Long application of a tourniquet often allows the infection to obtain a firm hold. Feebleness of circulation in the wounded part, whether from a general cause, such as shock, or from a local cause, such as tension from effused material or pressure of foreign bodies, favors its development. These bacilli grow most luxuriantly in devitalized muscle. The injured muscle or group of muscles is deprived, in part or in whole, of its normal blood supply according to whether the missile severs the main nutrient vessels or merely causes isolation of lacerated portions. Pressure in the neighboring parts, whether caused by effused material in the wound, by inflammatory reaction, or by external constriction, interferes still further with the circulation, and forms a most important arc of the ever-widening vicious circle of spreading inflammation.

From purely clinical observations, then, the principle has been evolved, and it is this: Whether one undertakes preventive, pre-inflammatory operation, or curative operation after the gangrene has developed, success and safety are assured only when the wounded parts are excised until *definite* bleeding of the cut surface is seen. The bleeding must be definite; it need not be free. In pre-inflammatory operations the use of a tourniquet during operation may be permissible; it is not advisable unless the patient is exsanguinate. In cases where gangrene is already well marked it should not be used. Care must be taken that in excising parts at the later stages of the operation the blood supply of tissues left behind at an earlier part of the operation is not interfered with; therefore, as a rule, proximal parts should be excised before distal parts. It is usually easy to decide, when this principle is kept in view, how much should be excised—whether only part of a muscle, the whole muscle, a group of muscles, or the limb.

Surgeons who base their work on this principle have more success, and have to perform fewer secondary operations than those who do not follow it.—(*Brit. Med. Jour.*, March 30, 1918.)

Tobacco and Tuberculous Laryngitis.

William S. Duboff, of Edgewater, Colo., reports an attempt to check the prevalent and plausible theory that the chronic congestion of the upper respiratory passages leads to a lowered local resistance to the tubercle bacillus. Three thousand histories of the Jewish Consumptives' Relief Society were carefully studied and due allowance made for possible error in the material. From his analysis he concludes:

1. Throat complications are probably no more frequent in tobacco users than in those who use no tobacco.

2. Laryngitis, whether of specific character or not, is equally common among women as among men in the course of pulmonary tuberculosis.

3. In an equal number of men and women with pulmonary tuberculosis, the majority of throat involvements will be associated with a negative tobacco history.

4. Tobacco obviously does not predispose to laryngeal complications.—(*Am. Rev. Tub.*, 1918, Vol. 2, No. 1).

War Activities

Fits All Wounded For Some Service.

Surgeon General Gorgas announces the completion of plans for the physical reconstruction of disabled soldiers in the general military hospitals. These plans are formulated with a view to close co-operation with the War Department Committee on Education and Special Service in the work of restoring men to full or limited military service, and with the Federal Board of Vocational Education, which is authorized by law to provide vocational training for disabled men after their discharge from the army and navy.

The records of 516 cases treated in four hospitals show 134 men able to return to full military duty; 210 fit for limited service, and 172 who are eligible for discharge. In the last group 12 are classed as helpless or institutional cases, 121 are able to return to their former occupations, and 39 will need further training to fit them for earning a living. These figures show the division of responsibility in the work of reconstruction. The task of fitting men for further military service is at present the most pressing need because, wherever an able-bodied man behind the lines can be replaced by one less fit physically, but vocationally capable, a soldier is gained for active duty. The reconstruction work in the hospitals, therefore, will emphasize technical training in all lines capable of adaption to the physical limitations of disabled men and in which employment will act as a therapeutic agent.

When play and work and study will help a man to get well this kind of medicine will be prescribed to the patient. If the work he does leads to further service in the army or to better prospects in civilian life, so much the better.

"The policy to be followed in these hospitals," said General Gorgas, "is that hereafter no member of the military service disabled in line of duty, even though not expected to return to duty, will be discharged from service until he shall have attained complete recovery or as complete recovery as may be expected when the nature of his disability is considered. In furtherance of this policy, physical reconstruction is defined as complete mental and surgical treatment carried to the point of maximum functional restoration, both mental and physical. To secure this result all methods recognized by modern medicine as conducive to cure will be utilized. In other words, not only the ordinary means of medicine and surgery, including all specialties, will be utilized, but also physical measures such as are employed under physiotherapy, including hydro, electro, and mechanotherapy, active exercise, indoor and outdoor games and passive exercise in the form of massage. Provision in the form of adequate buildings and equipment for physiotherapy shall be adopted in each of the hospitals.

Army Nutrition Officers.

Nutrition officers are to be stationed in every cantonment and large camp, where 10,000 or more soldiers are in training. These officers are food specialists who in civil life were well known as physiologists, chemists, economists, and experts in other specialized work relating to food.

Since last October the division has been making surveys of food conditions in the camps, resulting in many advantageous changes. Although the principal work was inspection of the manner of handling and preparing food, the visiting officers were able to give considerable instruction in the principles of nutrition, the proper selection of foods, the construction of dietaries, methods of avoiding waste, the importance of keeping kitchens and mess halls clean and orderly, and the methods of judging and storing food. Men and officers were very willing to co-operate to reduce the waste of food. One of the most effective means was introduced at one camp and followed later at others. Seven companies were selected from various organizations totaling 1,135 men. A two-day survey was run on each mess and the average edible waste was found to be 1.12 pounds per man per day. Instructions were then given in food and mess economy and a second two-day survey was made. This showed an average edible waste of 0.43 pound per man per day—a saving of 0.69 pound. This saving amounted to $61.75 per day for the seven messes, or at the same rate would amount to $22,542 per year. If the same rate of saving were brought about for the entire camp, in this case approximately 15,000 men, it would amount to $338,000 a year.

Work of this character showed the necessity of keeping a nutrition officer in each camp at all times. Sixty new officers are to be commissioned in the Division of Food and Nutrition to handle the additional work. All will be food specialists similar to those already in the service.

At the request of General Pershing, twenty additional nutrition officers have gone to Europe to supervise rationing of the soldiers of the A. E. F. This brings the total of such officers now on duty in England and France to twenty-nine. The first six of these specialists went abroad in March. Their investigations resulted in improved mess conditions, both in camp and in the trenches, and demonstrated the necessity for continuous supervision. One of the principal problems is the adjusting of the present garrison ration to current needs, as this ration was fixed long before the present conditions of modern warfare.

Army Surgeons Prepared for Pneumonia.

The Division of General Surgery of the office of the Surgeon General of the Army has been organized to meet and if possible to prevent the attack of pneumonia in one of its worst forms, which is bound to follow the assembling of large bodies of recruits in the camps and cantonments unless full preparation is made for its prevention. The heavier death rate, especially in some of the camps early last spring, was caused by the prevalence of the streptococcus, which was alrgely responsible for the high mortality. The Surgeon General was certain that he would have to meet this disease in all the camps and therefore in good season directed that proper preparation be made to meet it. He placed the matter in charge of a special commission, which included Lieut. Col. Knavel, Majors Dunham, Mitchell and Graham, and Captain Moschcowitz, Medical Reserve Corps. For the purpose of special study and investigation the members went to Camp Lee, where they did most of their heavy work. The Surgeon General in the meantime had directed special teams of surgeons and pathologists in every camp and cantonment to investigate and after consultation to report on every case of this character to the board at Camp Lee. As a result of these investigations courses of treatment are being adopted by which during the present favorable weather the mortality attendant upon this disease as been cut to a proportion that makes it insignificant. The first idea of the board is to prevent the inception and spread of the disease, a result which it accomplishes by means of quarantine and isolation in part and for the rest by means of prophylaxis. If in spite of these efforts empyema appears the surgeons treat it by operation. The division of surgery has now perfected its plans and it is believed impossible that pneumonia can reach any such death rate in any camp or cantonment as it did in some of them in the early part of 1918. The division attributes its success in this respect to the work in combination of the members of the board and the teams is the camps.—(*Army and Navy Jour.*)

Yale Army Laboratory.

Lieut Col. Charles F. Craig, Medical Corps, U. S. A., has been given charge of the new school for bacteriologists and chemists to be conducted at Yale University, during the period of the war. Yale has given the use of its buildings and dormitories for the work and about 100 officers and 200 enlisted men are to be trained here. The school is to be known as the Yale Army Laboratory School, and will train men to supply the mobile laboratory in the field in France, as well as stationary laboratories and technicians for base hospitals in France and in this country.

New Navy Base Hospital Abroad.

A Navy base hospital, under command of Medical Director Charles M. De Valin, U. S. N., consisting of personnel and sufficient for a total capacity of 500 beds, has now reached England for service with our naval forces operating in European waters in the area of its destination. This hospital, recruited principally from Los Angeles, Cal., was organized by Dr. Ray Smith of that city as director and has been mobilized for some time awaiting a call for service abroad. The mobility of naval forces and the danger of sending hospital and ambulance ships through waters in the field of submarine operations require that there should be a sufficient number of land base hospital stations for the receipt and treatment of the sick and wounded of the Navy.

The electro-cardiogram record is the electrical expression of the chemical processes that precede or accompany contraction, not the amount of contraction itself.

Instead of declining, as it had been steadily for many years, the death-rate of tuberculosis is rising in England. In 1916, it showed an increase of 12 per cent. on pre-war figures, and in a city like Newcastle-on-Tyne the death-rate from this disease in 1916 was 25 per cent. higher than in 1913, and there are signs of continued increase.

The Physician's Library

Drink. By Vance Thompson. 231 pages. New York: E. P. Dutton and Company, 1918.

If appalling statements could drive a drinker from his cups Thompson's book would promptly cure ever alcoholized reader.

Vance says that we have been a thoroughly alcoholized people and that insanity is the mad son of alcohol, idiocy its driveling daughter, and suicide its despairing child. These things being so we fail to understand why there are only 950,000 degenerates and criminals in the country. Mind you, practically all the insane, feeble-minded, deaf and dumb, blind, delinquent, pauperized and criminal owe their condition to alcohol, according to Vance.

Why, we insist, are there not more degenerates? Why, we insist further, are there any people at all left in the country?

And yet Vance says of other writers that they have attained a "demoniac inaccuracy" in the statement of facts.

We wonder if Vance is aware of Goddard's conclusion that there is no evidence tending to show that feeble-mindedness is ever the result of alcoholism.

After screaming steadily throughout 219 pages Vance takes breath to say that a wild emotionalism and a large and enveloping shallowness have confused and distorted the subject. The besetting danger in discussing the alcohol question, he says, is that of making a noise. He is convinced, he remarks, of the "wild objectionableness" of mere denunciation, and he thinks that the emotional way to fighting drink is obsolete.

Now if Vance were himself a drinker————.

Vance does say on page 93 that a Normandy peasant whom he found swigging hard cider on a hot day did not dare to pass him the glass—the sale of cider being prohibited in Normandy—*though his avaricious eyes danced at sight of the coin.* We are not disposed to infer anything from this incident beyond the mere testing of the peasant.

For an artist, Vance has a funny admixture of puritanism in him. He speaks of the "dreadful" Bernard Shaw, of "that bad and sneering old man, Anatole France," of the "harlequin of a dirty and materialistic literature, Zola," of "the wanton poet, Verlaine," and of "the montebank of thought, Huxley, beating the drum in front of the booths of science."

But does not the puritanism explain the man, the style, and the book?

After Vance puts over national prohibition, we suggest that he have the use of tobacco abolished and prescribe by enactment the kinds of food we shall eat.

But in the words of another writer, perhaps "before hostilities end the youthful hosts we send abroad will have had an opportunity to become familiar with the rights enjoyed by Frenchmen and Englishmen. When they return to these shores we can depend upon them to see to it that the home of the brave shall continue to be also the land of the free."

And after all, if the country had not been thoroughly alcoholized, it would have been overrun with intellectuals like Vance, and what would have become of him then, with all that competition, and of us, with all that noise?

A. C. JACOBSON.

Modern Urology by American Authors. Edited by Hugh Cabot, M.D., Chief of the Genito-Urinary Dept., Massachusetts General Hospital. Two volumes of 744 and 708 pages, respectively; Philadelphia: Lea & Febiger, 1918.

A milestone in urology has been reached in the publication of these volumes. Even at this day there are surgeons who do not see the occasion for making urology a separate specialty and many general surgeons feel themselves quite as competent to operate upon the kidney, bladder and prostate as they do to handle abdominal work. These volumes demonstrate beyond the shadow of a doubt that urology has not only arrived but that it has made for itself a definite place in the category of specialties.

Dr. Cabot, with the enthusiasm and energy so characteristic of him, has gathered around him a number of the country's leading genito-urinary surgeons and these men have contributed the very latest in urological science to these volumes.

Volume I has among its contributors Hugh H. Young, E. L. Keyes Jr., Bransford Lewis, B. S. Barringer, Edwin Beer, A. Ray Stevens and the late Paul M. Pilcher. The volume is divided into four parts: General Considerations, Diseases of the Penis and Urethra, Diseases of the Scrotum and Testicles and Diseases of the Prostate and Seminal Vesicles.

The first part takes up not only the history of urology, but goes into the matter of the cystoscope, the methods of diagnosis in lesions of the urinary tract and the roentgenology of the tract. The other sections thoroughly cover their subjects. For example, section 3 discusses in elaborate detail the anatomy, physiology, malformations, injuries and torsion of the testicles, diseases of the scrotum, hydrocele, hematocele and varicocele, infections of the testicle, genital tuberculosis and tumors of the testicle. Hugh Young presents in this volume three chapters on the prostate and its various difficulties.

Volume II is divided into three parts, Diseases of the Bladder, Diseases of the Ureter and Diseases of the Kidney, and has, among its contributors, Horace Binney, Hugh Cabot, J. T. Geraghty, F. R. Hagner, G. L. Hunner, E. L. Keyes Jr., H. L. Kretschmer, W. E. Lower, R. F. O'Neill, J. B. Squires and E. L. Young, Jr. Section one discusses the anatomy and physiology of the bladder, its malformations and diverticuli, its injuries, its infections, stone and foreign bodies in the bladder and tumors of the bladder. Section two is given over entirely to diseases of the ureter and section three is devoted to the kidney, its nine chapters being contributed by eight authors.

It is natural that with this great number of contributors there is not the continuity of thought and expression that characterizes a book written by a single author, but we believe that this is one of the strongest factors in favor of these volumes. They place before the profession the ideas of some of the leading urologists in the country. The only possible criticism which can be made is that a few of the best known urologists have not contributed to this work and others of the contributors are not sufficiently well known to give their words the necessary weight, but, all in all, these volumes form a splendid contribution to medical science, which will stand for a long time to come as standards.

The Treatment of War Wounds. By W. W. Keen, M.D., Emeritus Professor of Surgery, Jefferson Medical College. Second edition, reset. Cloth. 276 pages, illustrated. $2.00. Philadelphia and London: W. B. Saunders Company. 1918.

Any writings of Dr. Keen are bound to be accorded the closest attention of all medical readers. The timeliness of this book adds to the excellence of the material contained therein. The entire gamut of war wounds has been covered with care, although not with great elaborateness. Among the matters which appeal to the reader are the subjects of shock, Carrel-Dakin treatment, fractures, Bull-Pritchett serum, orthopedic surgery, gas gangrene and tetanus. In addition, Keen has given a resume, with sufficient bibliography, of some of the more important papers which have appeared in various medical journals on the treatment of war wounds and his contribution to the literature on this subject is valuable.

Military Hygiene and Sanitation. By Colonel Frank R. Keefer, Medical Corps, U. S. Army. Cloth, 340 pages, $1.75. Philadelphia and London: W. B. Saunders Co. 1918.

The second edition of this book is particularly apropos on account of its timeliness. The author, who was formerly Professor of Military Hygiene at West Point, is eminently well fitted to present a book on military hygiene which will meet every indication in army life. The subject has been very thoroughly covered in a brief way and leaves little to be desired. This book should be carefully gone over by physicians intending to enter the Medical Reserve Corps.

The Modern Splint. By Frank G. Nifong, M.D. Cloth. 162 pages. St. Louis, C. V. Mosby Co.

The author has done timely service in bringing out a book which tells in detail the good features of the Hodgen wire cradle extension suspension splint. The extension splint was devised by Gurdon Buck and the suspension splint by Nathan R. Smith. Hodgen combined both these features into one and produced a splint which is finding great favor in Europe today. Army medical officers will find this book of very great assistance in taking care of fractures of the femur.

Cystoscopy and Urethroscopy. By Dr. George Luys of Paris. Translated by A. L. Wolbarst, M.D., New York. Cloth, 386 pages. St. Louis: C. V. Mosby & Co. 1918.

Luy's reputation in this country is sufficient to give this book the necessary introduction to American urological practitioners. He is one of the world's best known endoscopists and has brought out in this work some points which are ordinarily overlooked in similar books. He is a believer in direct vision cystoscopy and one of his main objects is to popularize this particular method of diagnosis. The book is very naturally divided into ten chapters covering the various land marks of the subject. The value of the text is added to by some unusually high-grade illustrations, of which seventy-six are from original water colors. Dr. Wolbarst has performed a difficult task successfully in translating from lyric French into plain English. Through his conscientious effort the profession is given a most valuable work on a most important subject.

Materia Medica and Therapeutics for Nurses. By John Foote, M.D., Assistant Professor in Georgetown University. Cloth, 310 pages, $1.75. Philadelphia and London: J. P. Lippincott Co. 1918.

The third edition of this valuable book conforms to the ninth revision of the U. S. Pharmacopeia. The author took occasion to call upon the superintendents of Hospital Training Schools for suggestions and the results have been incorporated in this new edition. Among the additional data to the old edition is the discussion of antiseptics now being used in military surgery, and there is also a complete rearrangement of the drug classification.

Diseases of the Male Urethra. By Irvin S. Koll, M.D., Professor of Genito-Urinary Diseases, Post-Graduate Medical School, Chicago. Cloth, 151 pages, $3.00. Philadelphia and London: W. B. Saunders Company, 1918.

While this subject has been very completely covered by various authors in times past, there is one notable reason for the presentation of this book, the personal views of the author. They are very much at variance with those held by the majority of urologists. It might almost be said that Koll is quite unorthodox in his conception of very many phases of the treatment of the diseases of urethra, but, notwithstanding this fact, we believe urologists will be glad to study Koll's conception of his subject. The book goes into considerable detail, is well presented and adheres closely to the subject.

1917 Collected Papers of the Mayo Clinic, Rochester, Minn. Cloth. 866 pages, 331 illustrations. $6.50. Philadelphia and London: W. B. Saunders Company, 1918.

This issue is devoted to a discussion of diseases of the alimentary canal, urogenital organs, ductless glands, heart, blood, skin, head, trunk, extremities and venereal diseases. Thirty-five men have contributed to this edition and Mrs. Mellish, the editor, has made an unusually good selection. It is not too much praise to say that this is the best of the nine issues and one which stands out pre-eminently on account of the splendid material it contains.

The book is another evidence of the wonderful work which ie being accomplished in that mecca of medicine in the middle of Minnesota.

The Medical Clinics of North America. Volume I, Numbers II, IV and B. Price per year: Paper, $10.00; Cloth, $14.00. Philadelphia and London: W. B. Saunders Company, Published Bi-monthly.

These things are instructive and aid the reader in solving many a mooted clinical question.

Diagnostic et traitement de la méningite cérébro-spinale, par le Dr. Dopter, médecin principal de 2e classe, professor à l'Ecole du Val-der-Grâce. 2 fr. Paris: Librairie J.-B. Baillière et fils, rue Hautefeuille, 1918.

This is a complete resume of the diagnosis and treatment of cerobro-spinal meningitis by one of France's best known physicians. To readers of French it will prove of great assistance.

Physiological Chemistry. By C. J. V. Pettibone, Ph. D., of the University of Minnesota. St. Louis: C. V. Mosby Co., 1917.

A distinctly useful book to medical students and others who are seeking knowledge of the fundamental processes which go on in the body.

Infant Feeding. By Julius H. Hess, M. D., of the University of Illinois. $2.00. Philadelphia: F. A. Davis Co., 1918.

This book is based on the author's clinical cases and is intended particularly for use in clinical conferences. It is concise, exact and accurate and commends itself to favorable consideration.

Otology. By Gorham Bacon, M. D., and Truman L. Saunders, M. D., of Columbia University. $3.00. Philadelphia and New York: Lea & Febiger, 1918.

The seventh edition of this excellent manual is destinguished by several additions and some subtractions from the previous editions. It is very complete, its reputation has long been established and in view of this a review is quite unnecessary.

Exercise and Set-Up. By Samuel Delano, M. D., Boston. Four Seas Company, 1918.

The author, a Boston physician, believes the average work on this subject is not in keeping with things as they are. He feels that, in exercising "one must co-ordinate with nature; that one may not dissociate exercise from organic life" and he proceeds to set forth the methods of sane exercise. The book reads well and we feel that it would work out practically.

Chemistry of Food and Nutrition. By Henry C. Sherman, Ph. D., of Columbia University. $2.00. New York; The Macmillan Co., 1918.

That the importance of food and nutrition as factors in health may be appreciated is the object of this book. Today when nutritional studies are being made in our army cantonments and camps and when every one is interested in the science of food, a book of this nature will prove timely. The work is thoroughly done and is a distinct credit to the author.

The Surgical Clinics of Chicago. Volume II, Numbers I, II and III. Published Bi-monthly. Price per year: Paper, $10.00; Cloth, $14.00. Philadelphia and London: W. B. Saunders Company, 1918.

These issues are quite up to the standards of their predecessors.

Progressive Medicine. Vol. XXI, Nos. 1 and 2. $6 per year. Philadelphia and New York: Le & Febiger, 1918.

This quarterly is distinctly helpful with its excellent reviews of special subjects.

Reclaiming the Maimed. By Major R. Tait McKenzie, M. R. C. $2.00. New York: The Macmillan Co., 1918.

A carefully prepared and rather comprehensive hand book on a subject of vital importance. In condensed form this book covers the field well.

Public Health

Swimming Pool Disinfection.

The importance of selecting proper oxidizing agents for disinfection of swimming pools is noticed by W. A. Manheimer, New York. In large water supplies, he says, gaseous chlorin and the hydrochlorites have been used with great success in many cases, but in smaller systems they have occasionally failed owing to the production of objectionable tastes and odors. In swimming pools in which large quantities of organic matter are constantly being introduced, correspondingly large amounts of the chemicals must be used. It has been usual to find, therefore, either one of two conditions obtaining in pools where chlorin and its compounds are used, either insufficient purification due to the too small amount of chemicals used, or the production of objectionable tastes and odors by the use of a sufficient amount. These points are of importance since they are liable to affect the usefulness or safety of the pool. The addition of a powerful oxidizing agent such as ozone has been employed with success in large plants abroad.

He quotes from the public health reports for 1918 part of a summary of the tests made in the Twenty-third Street Bath, New York City, which show that the ozone tests are adequate in a pool which accommodates at times 1,500 bathers a day. The water was delivered sterile or nearly so, and the process thoroughly aerates the water and improves its appearance. Where adequate refiltration is combined with ozone disinfection the water may be retained in the pool for a considerable length of time with a material reduction in the cost of maintenance. The cost of operation for a 60,000-gallon pool is low. Only two items are to be considered, the amount and cost of electric current, and the cost of occasional replacement of calcium chlorid in the air dryer. An alternating current is required for the ozonator. If only a direct current is available it must be converted into an alternating current by means of a motor generator. This entails a current consumption of 2 kilowatts a day. If alternating current is available the cost of operation will be from 11 to 15 cents a day, allowing 1 cent for replacement of calcium chlorid and figuring electric current at the rate of from 5 to 7 cents a kilowatt. If the direct current must be converted into the alternating, from 10 to 14 cents must be added to these figures. The following are Manheimer's conclusions: "Ozone is recommended for swimming pool purification because: 1. It is reliable as a disinfectant. 2. It is capable of purifying heavily polluted pool water. 3. It produces no objectionable substances in the water. 4. It improves the appearance and transparency of the water, permitting a longer continued use of the pool, a consequent reduction in the cost of maintenance, and a reduction in the hazard of drowning. 5. It is inexpensive in application."—(*J. A. M. A.*)

Color Blindness Among U. S. Seamen.

The importance of differentiating between those who are dangerously color-blind—that is, unable at all times to distinguish between red and green—and those who are only slightly color-blind, is brought out in a recent study conducted by the

U. S. Public Health Service and reported in Public Health Bulletin No. 92.

The following classes are regarded as dangerously color-blind and therefore to be excluded from positions in which they would be required to read colored signal lights: (1) those who are able to see but three or less colors in the spectrum (the normal person sees six or seven); (2) those who see more than three colors in the spectrum, but who have the red end so shortened as to prevent the recognition of a red light at a distance of two miles; and (3) those with a central scotoma (that is, a blind or partially blind area in the field of vision) for red and green.

It was concluded that this class of persons could be distinguished from those harmlessly color blind by the use of the Edridge-Green color lantern, which was found preferable to colored yarns. The theories on which the color lantern is based are given in detail in the publication.

Another feature of the investigation was the study of the prevalence of color blindness. Excluding those able to distinguish five colors in the spectrum, it was found that color blindness occurs in about 8.6 per cent of men and 2.2 per cent of women. Color blindness of a degree dangerous in occupations requiring the recognition of colored signal lights was found to occur in about 3.1 of men and 0.7 per cent of women. Among refractive conditions of the eye, color blindness occurs least frequently in eyes apparently without demonstrable refractive error; it occurs most frequently in eyes showing mixed astigmatism.

The examinations were made as a part of other studies of the effect of illumination on vision; conducted as a part of an illumination survey of the Federal department buildings in Washington, D. C. One thousand persons were tested with the Edridge-Green lantern to determine both the value of the lantern and the effect, if any, of refractive conditions, lesions and anomalies of the eye, and also of sex, upon different degrees of color perception.

A special study of the Jennings self-recording worsted test was also made, 50 persons being tested with this and other tests. The results with the Jennings test were found to be too inaccurate for most work, although it was found to be superior to other tests in certain lines of work where great accuracy and the classification of color defects were not essential.

The Disinfection of Milk.

Milk is one of the most unclean of all the foods that appear on the average table, says a writer in *Good Health* (May, 1918). In many cases, every drop contains a million germs or more. Water containing one-tenth as many would be promptly rejected as absolutely unfit for use. Even "certified" milk is permitted to contain 10,000 germs to the cubic centimeter, perhaps a thousand to each drop.

These germs are the cause of diarrheas in young infants and are responsible for tens of thousands of untimely deaths each and every year.

Evidently milk needs disinfection, but how can this be done safely? Boiling destroys the precious vitamines and so is out of the question. Pasteurizing is scarcely safe.

The fortunate discovery has been made that that remarkable oxygen compound, the peroxide of hydrogen (H_2O_2) which contains two atoms of oxygen in each molecule, double the amount contained in water (H_2O), may be safely used for this purpose. It has been found that when this wonderful compound is added to warm milk the extra oxygen atom escapes and destroys the germs. But this only occurs if the milk has not been boiled. It is necessary that the living enzymes of the milk should be present.

This process was first used in Sweden, where it is extensively employed in preparing milk for shipment to other countries. In experiments made in the bacteriological laboratory of the Battle Creek Sanitarium it was found that milk treated by this process could be kept in a room, at ordinary temperature, without souring, for more than a week.

The process is exceedingly simple. The milk is heated to about one hundred and twenty degrees. One to four drams of Dioxogen is then added for each pound of milk and the temperature maintained for about fifteen minutes. The milk is then cooled and kept on ice or in a cool place. Should there be a need for keeping it several weeks, three or four drams of Dioxogen should be used instead of one.

This plan of disinfecting milk has been in use for several years in the Children's Department of one of the largest hospitals in Chicago, and with the very best results. Many creameries are already using it to improve the keeping properties of their products. For preparing milk to take on a journey of several days this method is especially excellent.

The addition of Dioxogen does not alter the flavor of the milk and in no way injures any of its valuable food properties.

There is one point that has always to be considered and that is the fact that after the Dioxogen has been added the milk must be carefully and thoroughly agitated. It took a long series of experiments to prove that agitation was an absolute essential.

Modern Health Crusade Enrolls a Million Children.

That nearly 1,000,000 boys and girls throughout the nation have now been enrolled as Modern Health Crusaders, and that recruiting to increase this membership to still greater numbers will soon begin, was announced today by the National Tuberculosis Association, under whose direction this movement is conducted. The crusade, the association states, "centers about a simple but fundamental program of health 'chores,' on the part of children, and enlists the rising generation of the nation's citizens in a better understanding of individual and public health essentials."

"The American Red Cross," the association announces, "has now officially endorsed the Modern Health Crusade.

"New insignia for the coming year," the association's announcement concludes, "have now been prepared for the Crusader hosts. These consist of a button for the Squire, a silver pin for the Knight and a gold pin for the Knight Banneret. The button shows Liberty at war against disease, and the metal pins show a Crusader bowman about to let his arrow fly from behind his Modern Health Crusader shield."

The Tuberculosis Committee of the New York State Charities Aid Association has been sponsoring this movement throughout the state. Medical science has accepted the theory that childhood is the period of infection when special efforts should be made to build up the resistance to disease on the part of school children. This committee has, therefore, been enrolling school children throughout the state as crusaders and seeking their co-operation in the effort to help them form the habits of right living and personal hygiene which constitute the fundamentals of the Crusade.

Tuberculosis

Col. Bushnell on Tuberculosis.

Col. George E. Bushnell, U. S. A., retired, discusses the treatment of tuberculosis. Rest, fresh air, exercise, feeding, symptomatic treatment and tuberculin are taken up in turn. The object of any form of treatment is to aid the natural defenses that exist in any animal body, be it that of a guinea pig or that of a human being, which has received an initial slight immunizing infection. Pulmonary tuberculosis as it usually presents itself manifests a tendency to cure or at least a tendency to become localized. There can be no doubt that an immunity is present and that it is an immunity of a very high degree. It is reasonable to believe that comparatively slight remedial agents may suffice to arrest the patient's organism to make the comparatively slight effort demanded to acquire again the state of absolute resistance to the tubercle bacillus. The agents that have been found to be helpful in this regard are better oxygenation from abundance of fresh air, rest to restore the weakened nerves of the patient and lower demands upon his reparative powers, and good food well assimilated. These constitute the tripod of treatment; with them, wisely used, wonders can sometimes be accomplished, but only, it should always be borne in mind, in cases in which there already exists an immunity which is capable of reinforcement. In tuberculosis we prescribe not medicine but a mode of life. The psychical side is that which is most neglected, yet in it the most notable successes are attained. Next to good immunity and a good physician, the third most important desideratum in the treatment is faith in the physician and willingness to co-operate on the part of the patient.

Te influence of rest in abating the severity of an inflammatory process is well known. The effect of motion and of friction in spreading infection from a suppurating focus is a familiar surgical fact. Not only should deep breathing be avoided but motion of the upepr extremities should be reduced to a minimum. Rest is also highly desirable to promote a cicatrization and encapsulation. And lastly rest of the body is needed for its recuperation. Psychic and physical relaxation should both be practised. The neurasthenic tuberculous patient with the anæsthesia of fatigue or the restlessness of the overfatigued who are "too tired to rest" must learn to rest and relax not only to recreate his energy in some measure, but to store it up. Rest must be by all means associated with the outdoor life so far as is practicable.

The problem of exercise is one that will frequently tax the acumen of the physician. The febrile tuberculous patient in whom the maximum daily temperature habitually exceeds 99.5° F. should unqeustionably be kept in bed. The best rule is to require the acute case to rest irrespective of temperature, as the condition becomes more chronic to be guided strictly by the thermometer, and when the case has become one that is progressing toward arrest to ignore the slight fluctuations of the temperature. Cases with large lesions must be treated with more severity as respects the enforcement of quietude than those with small lesions. Each case must be the subject of special study. As has been well said, the patient who begins to exercise has reached a period of danger in his course of treatment.

In cases where there has been a nutrition deficit the problem is easy—all that is necessary is to give the patient what and as much as he wants. For those that have no true deficit to make up, stuffing with food is only prejudicial. In many cases, difficulties of digestion are dependent upon the kind, rather than the amount of food.

The symptomatic treatment of the consumptive does not differ from that of other patients, cough medicine should be used sparingly and only for special indications. The idea that expectoration is infectious for the patient and must be gotten rid of without delay is an error, as is the notion that it is extremely dangerous to swallow sputum. The physician can be of much comfort by teaching that the fugitive pains in various parts of the body and the various manifestations of indigestion are common in all those whose health is below par and have no direct communication with tuberculosis.

Tuberculin is most helpful to those who need help least. Advanced cases of tuberculosis are very seriously impaired by it. But the rather numerous class of sanatorium patients who have little or no active tuberculosis, their disease being of a chronic, though often diagnosticated as acute type, are able to tolerate it, sometimes apparently to their advantage.—*(Am. Rev. Tub.*, 1918, Vol. 2, No. 5.)

Primary Tuberculosis of the Faucial Tonsils.

The common belief that primary tuberculosis of the faucial tonsils is rare probably depends on the usual absence of signs and symptoms apart from the secondary infection of the cervical glands, and on the impossibility of recognizing it without the help of the microscope, and inoculation experiments. Dr. A. Philip Mitchell, in the *Journal of Pathology and Bacteriology*, gives the results of examination of material obtained from surgical operations during six years of hospital practice, his investigations forming part of a study of tuberculosis of the cervical lymph nodes, reported on in the *British Medical Journal* of January 17, 1914.

This inquiry fell naturally into two divisions: the examination of tonsils removed from children affected by tuberculosis of the upper deep cervical glands, and the examination of hypertrophied tonsils removed from children with no clinical evidence of tuberculosis of the cervical lymph nodes, or other parts. Four points received particular attention: age of patient; source of material—that is, whether obtained during life or *post mortem;* clinical evidence of tuberculosis; and history of tuberculosis in other members of the household.

By means of histological examination and animal inoculations Dr. Mitchell finds that primary tuberculosis of the tonsils, at least in Edinburgh, where, out of 406 samples of mixed milk collected from milk shops, 82 (20 per cent.) contained tubercle bacilli, is much more frequent than is usually held. Thus, out of 106 (100 children, 6 adults) operation cases of tuberculous cervical glands, 41, or 38 per cent., showed tonsillar tuberculosis, most often immediately under the surface mucosa, less frequently in relation to the deeper parts of the crypts or close to the capsule. In 80 out of the 106 cases the tonsillar lymphatic gland in the angle formed by the junction of the common facial and internal jugular veins under the posterior belly of the digestric muscle showed at operation evidence of the most advanced tuberculous change. The inoculation test was positive in 20 out of 92 cases, the bovine type being present in 16 and the human in 4. The reason why inoculation was less often positive than the microscopic test is that many of the guinea-pigs died from rapid septic infection before the tuberculous changes had time to develop. The size and shape of the tonsil do not show any special relation to tuberculous infection; in 51 cases the tonsils were small, submerged, and firm, in 27 cases large, and in 28 of medium size. Among a further series of 100 chronically hypertrophied tonsils without tuberculous cervical glands tuberculosis was found in nine.

Dr. Mitchell's main conclusions may be put briefly as follows: Tuberculosis of the upper deep cervical glands develops from a primary focus in the tonsils much more often than is generally supposed, but the primary tonsillar infection can only be detected by the aid of the microscope and inoculation experiments. The lesions are principally found just under the surface epithelium and near the mouths of the lacunae; less often in the deeper portions. Hypertrophied tonsils may be the seat of primary tuberculosis, though rarely as compared with tonsils from cases of tuberculous cervical adenitis. In Scotland at any rate primary tuberculosis of the tonsils in children is attributable rather to the ingestion of tuberculous milk than to the inhalation of human tubercle bacilli; it is, therefore, essential in the present state of the milk supply that children's milk should be boiled. In all cases of tuberculous glands in the neck removal of the tonsils entire in their capsule is necessary. Lastly, bovine and human types of tubercle bacilli are present in the tonsillar crypts of a small percentage of children without demonstrable tuberculous lesions, either in the tonsils or elsewhere.—*(Brit. M. J.)*

Localized Pneumothorax in Pulmonary Tuberculosis.

M. Fishberg says a localized or interlobar pneumothorax frequently occurs in the course of pulmonary tuberculosis and is often overlooked or regarded as a large vomica. The distinction between the two is difficult, but *x*-ray examination, especially by screening, has made the diagnosis easier, though skiagraphy is not infallible, and may even be misleading. In fact, Fishberg remarks that he has often been confused by skiagraphic reports when they conflicted with the physical signs, and if one method only was available would prefer physical signs. A bright circumscribed area without lung markings and without a surrounding thick, dark shadow, is strongly in favor of a localized pneumothorax; but, if the local pneumothorax is in front with much adherent lung tissue behind, there may be no bright area; and, on the other hand, the walls of a vomica may not cast a shadow, and so what is really a cavity appears like a localized pneumothorax. A vomica may appear as a clear area when empty, and when full of secretion cast a shadow, whereas a localized pneumothorax does not show these changes. Multiple clear areas necessarily point to the presence of cavities in the lung.

Fishberg describes with illustrative cases (1) localized pneumothorax running a rapid and fatal course with symptoms of a complete pneumothorax, and (2) latent localized pneumothorax, with sudden onset of more or less severe symptoms which soon abate, so that the patient feels well and the lesion is not recognized. The sudden onset of pain, cyanosis, and dyspnea of course suggests pneumothorax, and the sudden appearance of signs of a cavity points in the same direction. A localized pneumothorax is as a rule dry and without the adventitious sounds commonly heard over a large cavity. The presence of a large dry cavity, especially when extending into the axilla, should arouse suspicion. Metallic breathing is common in a localized pneumothorax, rare in a cavity. Whispered pectoriloquy is common in localized pneumothorax, rare in vomicae. The percussion note over vomicae is rarely tympanitic, whereas the cracked-pot sound is more frequent over vomicae. The coin sound is exceedingly rare over vomicae, but sometimes present over a localized pneumothorax. Bulging and widening of the intercostal spaces may be noted over local pneumothorax. Displacement of the heart need not occur in association with a localized pneumothorax. Although a consideration of all these points will clear up most of the doubtful cases, there are some in which the diagnosis fails.—*(Arch. Int. Med.*, 739.)

Five Tuberculosis Conferences to Cover Country.

Plans are now under way, according to announcement made today by the National Tuberculosis Association, for five great conferences covering the country in geographical sections from Atlantic to Pacific, to consider practical measures for coping with tuberculosis as a war problem. Starting in the northwestern states, this series of gatherings will extend next to the southwestern group, and then work eastward, taking in the south, the middle Atlantic section and ending with New England.

Means of providing adequate care for the thousands of soldiers and sailors already discharged from the army and navy on account of tuberculosis and the still greater number rejected in the draft for the same reason will be one of the main questions discussed. The closely related question of educating the civilian population more fully regarding tuberculosis during the war and thus combatting its further spread in the commu-

Often many years intervene between the time of infection and the development of clinical tuberculosis and many cases infected never develop the disease.—Slater.

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nity at large, will also be considered. Not less than 1,000,000 persons in the United States, the National Tuberculosis Association states, are today afflicted with this disease, the annual death toll from which is upward of 150,000.

Anti-tuberculosis workers, physicians, local, state and federal officials, officers of the army and navy, and many others will take part in these conferences. The programs for each section, which will differ according to local conditions, will be announced at an early date. The meeting places and dates are as follows: Spokane, Wash., September 27-28; Denver, Col., October 4-5; Birmingham, Ala., October 11-12; Pittsburgh, Pa., October 17-18; Providence, R. I., October 25-26.

New York State workers will attend the North Atlantic conference held at Pittsburgh. All local tuberculosis committees throughout the state, boards of managers and medical superintendents of tuberculosis hospitals, visiting nurses, dispensary physicians, fresh air class teachers and all others interested will be urged to attend this conference by the tuberculosis committee of the State Charities Aid Association which will also send representatives to attend and participate.

The Vaccine Treatment of Hay Fever.

G. H. SHERMAN, M. D., Detroit, Mich.

It will not be long until hay fever victims will again seek relief from their suffering. Unfortunately, the endless variety of drugs and local treatments that have been applied for this ailment have been so unsatisfactory that most hay fever victims have abandoned consulting doctors and simply tolerate the disease as best they can until the season is over with. This does not apply, however, to those who have given the vaccine treatment a trial. Hay fever victims find that this treatment either prevents or aborts the attack or gives such relief that they come back for the same treatment when the season approaches.

The writer has made some special efforts to obtain reliable information concerning the comparative virtues of pollen and bacterial vaccines in the treatment of hay fever and has found that bacterial vaccines give by far the best results. This shows that pollen irritation is not the only etiologic factor in hay fever and that irritation from pathogenic organisms also plays an important part in the disease. In fact, are common in irritated tissues, no difference what the source of the irritation is and, consequently, aggravate and prolong the irritation. That is what undoubtedly happens in hay fever.

Pollen and the dry dust laden air irritate the respiratory mucus membrane. After this irritation is started, pyogenic organisms normally present find conditions suitable for growth and multiplication with a resulting increased irritation.

The germs usually responsible for this irritation are the streptococcus, pneumococcus, staphylococcus and micrococcus catarrhalis, the same organisms that are responsible for most of our colds. For this reason the same vaccine usually employed in the treatment of colds (Sherman's No. 40) is also successfully employed in the treatment of hay fever.

Treatment should be started by giving the vaccine a few weeks before the usual onset of symptoms. By this means the attack will often be entirely avoided. The vaccine should be given at four or five-day intervals, starting with .5 mil. and increasing the dose to 1 mil. In some cases that have received this preliminary treatment, hay fever will set in with the usual pronounced symptoms, but if the vaccine injections are continued at three or four-day intervals in 1 mil. doses, the symptoms will soon subside or become much modified. Good results are also obtained after the hay fever has progressed for several weeks, but in such cases it is necessary to give 1 mil. doses at three or four-day intervals until the acute symptoms are under control and at four to seven days after that. If marked improvement does not take place after three or four treatments, a bacterial examination should be made to determine the presence of unusual organisms and if present a corresponding vaccine employed or an autogenous vaccine prepared and given.

Fougera's Magazine.

The old established house of E. F. Fougera & Co. is issuing a Medico-Historical Series of real interest. The subject matter is of value and the profession will doubtless accept the series on account of the excellence of the reading matter contained therein.

Studies on Anaphylaxis.

The anaphylaxis number of *The Doctor's Factotum* is of decided interest on account of the excellence of the material presented therein. Physicians are advised to ask the Arlington Chemical Co., Yonkers, N. Y., for a copy of this instructive number.